Vidya Niwas Misra

THE DESCRIPTIVE TECHNIQUE OF PĀṆINI

491.25
P193.4M

The second quarter of this century was marked by a new interest in Pāṇini, the 5th-century B.C. Indian scholar of language. L. Bloomfield was the first to recognize in the grammar of Pāṇini a "monumental work of human intelligence". Pāṇini's grammar, the Aṣṭādhyāyī, was not intended to be a comparative study or a dialect survey: "Pāṇini was describing a colloquial speech, a conservative upper class language, to be sure, but a language native to him and used in everyday life by the Brāhmins in his part of North Western India."

Patañjali, an early student of the Pāṇinian school, defines the purpose of the Aṣṭādhyāyi as the 1) preservation of the ritual language in its traditional form; 2) capacity of generation of forms from one pattern to the other; 3) sanctity of the grammatical science itself as an integral part of the scripture; 4) economy of description to facilitate memorization; and 5) clarity of description. Thus, Pāṇini presented a mathematical grammar capable of generating new forms which also accounted for all extant forms and constructions in his language without taking recourse to specific illustrations.

Professor Misra has undertaken his study of Pāṇini in order to analyze this early, mathematical model for the grammatical description of Sanskrit for the benefit of a Western descriptive-oriented audience of linguists. Following a brief introduction to the Pāṇinian grammatical tradition in India, Misra turns to a careful description of Pāṇini's techniques in modern linguistic terminology and attempts to establish this scholar's contemporary relevance. Misra gives a clear exposition of the mathematical symbols used by Pāṇini, explaining their significance and functional load in the Aṣṭādhyāyī and concludes his work by comparing Pāṇini's methods with modern linguistic methodology, assessing the possible application of some of Pāṇini's techniques today as also his contributions to the theory of language. Extensive indices to the Aṣṭādhyāyī, as well as a selected bibliography of modern linguistic works, of writings pertaining particularly to Pāṇini and his school, and of the Sanskrit texts, are appended to this highly informative and valuable study.

THE DESCRIPTIVE TECHNIQUE OF PĀṆINI

CATALOGUED

JANUA LINGUARUM

STUDIA MEMORIAE
NICOLAI VAN WIJK DEDICATA

edenda curat

C. H. VAN SCHOONEVELD

INDIANA UNIVERSITY

SERIES PRACTICA
XVIII

1966
MOUTON & CO.
THE HAGUE · PARIS

THE DESCRIPTIVE TECHNIQUE OF PĀṆINI

AN INTRODUCTION

by

VIDYA NIWAS MISRA

UNIVERSITY OF GORAKHPUR

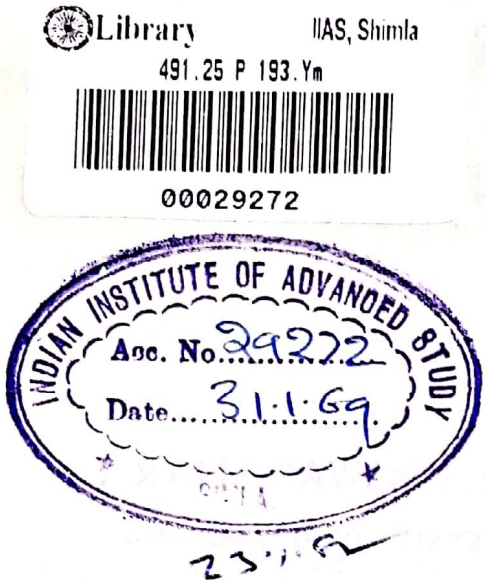
1966

MOUTON & CO.

THE HAGUE · PARIS

© Copyright 1966 by Mouton & Co., Publishers, The Hague, The Netherlands.

No part of this book may be translated or reproduced in any form, by print, photoprint, microfilm, or any other means, without written permission from the publishers.



491.25
P193.YM

Printed in The Netherlands

Dedicated to my Gurudeva
Pandit Kṣetreśa Candra Chaṭṭopādhyāya
With Gratitude

ACKNOWLEDGEMENTS

The present work is a dissertation for Ph. D., awarded by the University of Gorakhpur, but most of the work was done at the University of California, Berkeley (Center for South Asian Studies). I am indebted to this institution as also to my Gurus, Pandit K. C. Chaṭṭopādhyāya, Pandit Muniwar Misra and Prof. M. B. Emeneau. From time to time I sought suggestions and comments from J. Kuryłowicz, M. Halle, W. S. Allen, K. L. Pike, Sydney Lamb, J. F. Staal, John J. Gumperz, S. P. Chaturvedi, K. Doraiswamy, G. C. Pande and A. B. Singh, and I am grateful to them all.

I shall be failing in my duty if I do not acknowledge the help received from my friends and colleagues, Sri V. N. Tripathi, Sri M. Misra, Sri R. A. Pande, Dr. R. N. Sahai, Dr. S. K. Verma and Sri R. K. M. Tripathi at various stages. Lastly, I owe my gratitude to Mr. Peter de Ridder, Director of Mouton & Co., who has been so efficient in production of this work.

I know my limitations of language as well as of the content. I have myself given new thought to the problem of linguistic meaning in Pāṇini's system and that would be an improvement on my present work. The work as it is an humble attempt to introduce the technique of Pāṇini to the modern linguist. I therefore seek kind indulgence of the theorists, the work may be judged as a preliminary to the study of Pāṇini.

August 1965

VIDYA NIWAS MISRA

TABLE OF CONTENTS

Acknowledgements 7

Introduction 11
0.0. The purpose and scope of this study 11
0.1. The grammatical tradition in India, precursor to Pāṇini 14
0.2. The purpose of the A. 17
0.3. Pāṇini and the text of A. 18
0.4. The arrangement of the A. 22
0.5. The phases in the later development of the Pāṇini school 24
0.6. Symbols and abbreviations used in this analysis 28

1. The nature of rules of Pāṇini 30
1.0. The general features of a Pāṇinian rule 30
1.1. The main categories of the rules 34
1.2. The main components of a rule 36
1.3. The significance of the inflectional endings 37

2. The technical rules of Pāṇini: grouping 39
2.0. General Observations 39
2.1. The *Śiva Sūtra* groups 40
2.2. Other types of groups besides the Śiva Sūtra groups 61

3. Technical rules: definitional and applicational rules 83
3.0. General Observations 83
3.1. Definitional rules 84
3.2. Rules of application (Paribhāṣā) 102

4. The main body of description, and conclusions 110
4.0. The general framework of the description 110
4.1. Sentence according to Pāṇini 111
4.2. Sentence types 114
4.3. Morphemics 121

4.4. Morphophonemics 125
4.5. Conclusions 129
Index 1A 130
Index 1B 141
Index 1C 143
Index 2A 145
Index 2B 148
Index 2C 169

Selected bibliography 173

INTRODUCTION

0.0. THE PURPOSE AND SCOPE OF THIS STUDY

The second quarter of this century was marked by a new interest in Pāṇini. L. Bloomfield for the first time saw in the grammar of Pāṇini (hereafter referred to as Aṣṭādhyāyī, A.) a "monumental work of human intelligence".[1] He was particularly impressed by "the shorthand notation ... which makes our terminology seem halting in comparison".[2] During recent years "model of grammatical description" has been a matter of discussion amongst the structural linguists. M. Joos is of the opinion that linguistics can be made an exact science, a kind of mathematics.[3] Pāṇini's A. is being looked upon as the first and the best model of description, which has a mathematical approach to language. Therefrom the idea of this study came into my mind.

0.0.0. The main purpose of this study is:

(1) to introduce in brief the Pāṇinian grammatical tradition in India;

(2) to describe his technique in modern comprehensible terms, as far as it is possible, to find a correspondence in modern linguistics, and to explain the factors which make it different and which called forth this remark of Bloomfield: "Pāṇini's treatise is intelligible only with a commentary; even with the many commentaries we possess – and they contain a vast amount of intelligent and even brilliant scholarship – several lifetimes of work will have to be spent upon Pāṇini before we have a conveniently usable exposition of the language which he recorded for all time"[4];

(3) to give a clear exposition of the mathematical symbols used by Pāṇini, charting out their significance and functional load in his own A.;

(4) to compare the methods of A. with some prominent methods used in modern linguistics, and assess the possibility of application of some of A.'s methods.

[1] L. Bloomfield, *Language*, p. 11.

[2] L. Bloomfield, Review of B. Liebich, *Konkordanz Pāṇini-Candra*, in *Language*, V, p. 271.

[3] M. Joos, "Description of Language Design", *Readings in Linguistics*, p. 350.

[4] L. Bloomfield, Review of B. Liebich, *Konkordanz Pāṇini-Candra*, in *Language*, V, p. 270. See also P. Thieme, "On the identity of Vārttikākāra", *I.C.*, IV, p. 201: "He is so subtle as to be ambiguous, and not seldom incomprehensible. Today a scholar who wants to freely handle and master his injunctions must possess a stupendous memory and a tremendous amount of learning in the vast literature discussing the implicit suggestions, silent assumptions and principles underlying his formulation or supposed to underlie them."

0.0.1. The scope of the study is intended to be limited to the descriptive aspect in A. and is further confined to the description of Pāṇini's own language, which he takes to be norm, and treats the variations in:

(a) the language of the incantations used for ritual,
(b) the speech of the activity of ritual,
(c) the dialects bordering his geographical area, the eastern and the northern, and
(d) the dialects analysed by his predecessors.

0.0.2. The present study, with a view to present the core of Pāṇini's analysis for the present, does not intend to include these four types of variations. It was, however, thought useful to include these variations under various charts in the main body of the analysis as well as in the Indices.

As would be evident from my observation on the purpose of Pāṇini's grammar, the A. is neither intended to be a comparative grammar nor a dialect survey; it is a synchronic[5] description par excellence of the speech of the priestly class,[6] and as such only those variations were thought to be pertinent to his description, which occurred either in the common day speech or the ritual speech. The priests were more or less a pan-Indian community, so, in spite of a limited scope for variation due to geographical or traditional factors, their speech had a common core or norm. The question as to whether Sanskrit as described by Pāṇini was spoken by this particular class alone cannot be answered with certainty. The main reasons are:

(i) Pāṇini did not give illustrations for his rules, and the only evidence for the wider usage of the language described by him can be found in the few scattered vocables which refer to agriculture,[7] sports,[8] village social life,[9] and names.[10]

(ii) There is no conclusive evidence regarding the speech of the common people being different from Sanskrit of Pāṇini, in Pāṇini's own geographical area (i.e., the North Western India) prior to the date of Aśoka's inscriptions (at least two centuries posterior to Pāṇini's date).

(iii) Pāṇini was more concerned with perfecting the tradition of grammatical description and making it a venerable science self-contained in itself without recourse to any extraneous definition or factor in the other spheres of knowledge, so he assumed from his posterity not only a thorough knowledge of Sanskrit but also of the meta-linguistic jargon. It did not intend to give an introduction to the cultural situation of the language under analysis. So we are left to speculate, and from little bits of in-

[5] F. de Saussure, *Course in General Linguistics*, English translation, p. 81: "Everything that relates to the static side of our science is *synchronic*."

[6] L. Bloomfield, *Language*, V, p. 269: "Pāṇini was describing a colloquial speech, a conservative upper class language, to be sure, but a language native to him and used in every day life by the Brāhmins in his part of the North Western India."

[7] E.g. *Vatsokṣāśvarṣabhebhyaśca* A.V.3.91; *śa eṣām grāmaṇīh* A.V.2.78; *sāsyena parijātah* A.V.2.68; and *dhānyānām bhavane kṣetre khañ* A.V.2.1.

[8] *Tadasyām praharaṇamiti krīḍāyām* IV.2.57, etc.

[9] *Grāmajanabandhusahāyebhyastal* IV.2.63, etc.

[10] *Udīcyagrāmācca bahvacontodāttāt* IV.2.109, etc.

formation scattered here and there, to build up a picture, as has been admirabloy done by V. S. Agrawal in his *India as known to Pāṇini.*

0.0.3. But one thing is definite. The language under analysis is a living reality, as is clearly shown by

(i) detailed analysis of proper names;[11]

(ii) accent – morphophonemic application to the language of ritual, as well as of common day life,[12] including sentence intonation;

(iii) onomatopoeic word formation and doublets;[13]

(iv) unmistakably clear reference to the various contexts of speech, such as salutation[14] (A.VIII.2.83), calling from a distance[15] (A.VIII.2.84), reply to a question[16] (A.VIII.2.93), rebuke[17] (A.VIII.2.95), and the like;

(v) nuances of idiom possible only in colloquial speech,[18] such as the formations "*Lālāṭika*" and "*Kaukkuṭika*" formed by the rule A.IV.4.46, meaning respectively a carefree servant (who is always looking above) and an extra-cautious mendicant (who is always looking beneath). The mistaken notion[19] that Pāṇini wrote his description for the purpose of preserving a language which was not current, will be belied by the facts mentioned above. This notion can arise only when one loses sight of the structural nature of the A.

0.0.4. In brief, the purpose and scope of this study are limited to Pāṇini's application of a mathematical model of grammatical description of Sanskrit spoken by the group which he represents, and to show the working of his system to a Western descriptive-oriented audience of linguists. Its further limitation is an emphasis on the study of Pāṇini through Pāṇini, the reason being that firstly, there is ample evidence to show that between Pāṇini and his successors there is not only a time gap, but also a gap of discontinuity of tradition,[20] and secondly the divergence in the outlooks of three main periods in the history of the Pāṇinian school, viz., the early period of Vyāḍi, Kātyāyana and Patañjali, the middle period of Kāśikā, Nyāsa and Padamañjarī, and the modern period of neo-grammarian school founded by Bhaṭṭoji Dīkṣita, is a subject for an independent study.

[11] A.IV.2.117 *Vāhīkagrāmebhyaśca*; IV.2.118 *Vibhāṣośīnareṣu*; IV.1.169-173; IV.1.158; IV.1.49.

[12] A.VI.1.158-2.199; VIII.1.16-74; VIII.2.4-6, and other stray references. For sentence intonation, VIII.2.82-108.

[13] A.VIII.1.1-14.

[14] A.VIII.2.83.

[15] A.VIII.2.84.

[16] A.VIII.2.93.

[17] A.VIII.2.95.

[18] A.I.3.16; I.3.37; I.4.106; II.1.63-65; III.2.120; III.3.40; III.3.116; III.3.163; IV.1.42, and the transformation models used in the secondary derivational formations.

[19] W. D. Whitney, *Sanskrit Grammar*, p. xv: "Introduction".

[20] See "Pāṇini's skilfully planned out representation has almost completely lost, under the treatment of Kāśikā, its logical disposition – his chief principle of arrangement – the distinction of Vedic verse and prose (A.VI.1.117-119)" (P. Thieme, *Pāṇini and the Veda*, p. 60). See also "In Pāṇini they the accents] were a living reality, but were lost already at a time prior to Patañjali" (*ibid.*, p. 121).

0.1. THE GRAMMATICAL TRADITION IN INDIA, PRECURSOR TO PĀṆINI

0.1.0. Besides the stray references in the non-grammatical Vedic literature, we find a clear reference to different schools of grammar prevalent in Pāṇini's time either in Pāṇini's A. or the Prātiśākhyas, some of which precede and others follow Pāṇini. The date of Pāṇini varies from the 7th century B.C. to the 4th century B.C. Assuming the date of Patañjali to be the 2nd century B.C., and that of Kātyāyana to be the 4th century B.C. (relying on the internal evidence of divergence of language between these two), we have to assign a date which precedes Kātyāyana by at least a century, in order to provide for a gap of tradition, without which the elaborate addenda of Kātyāyana will have no meaning. So roughly as a modest estimate, Pāṇini may be ascribed to the 5th century B.C. As regards the chronological order of Pāṇini and the most important Prātiśākhyas, there is still an unresolved controversy mainly focussed on internal evidence. On one side is the extreme view of Goldstucker making Pāṇini anterior to the White Yajūrveda Brāhmaṇas,[21] and on the other is another extreme view of Keith[22] and B. K. Ghosh,[23] who hold that Pāṇini is posterior to Ṛk Prātiśākhya and cannot be earlier than the 4th century B.C. In between stands the view of Paul Thieme,[24] supported by Saraswati Prasad Chaturvedi[25] and K. Chattopadhyaya, who place him earlier than the Prātiśākhyas in their present shape.

0.1.1. For the purposes of this study, it may not be relevant to go into the details of this question, it would suffice to point out that, whatever the chronological order of the Prātiśākhyas in their present shape be, it is proved beyond doubt that Pāṇini stood at the culmination point of a rich grammatical tradition. The main schools of thought were as follows:

(1) Aindra (founded by Indra) to which by tradition the Bhāradvāja School also belongs,[26] the reference to Bhāradvāja in A. is at VII.2.63. This school according to Patañjali in his Mbh. introduction followed the principle of analysing every word; according to commentary on Kātantra Grammar I.1.20, the Aindra School took Pada (inflected word) to be the unit of meaning.

(2) Śākaṭāyana, referred to in A. (III.4.111, VIII.3.18, and VIII.4.50), is according to Yāska,[27] another predecessor of Pāṇini, the propounder of the extreme view that all the nonverbal forms are derived from verbal roots, though Pāṇini's references pertain either to allomorphy of the conjugational suffix or external sandhi; the Kāśikā commentary refers to this school with reverence;[28] the original work of Śākaṭāyana was lost and a school in his name was revived later.

[21] Theodore Goldstucker, *Pāṇini*, p. 108.
[22] A. B. Keith, *Indian Culture*, 1936, pp. 742-744.
[23] B. K. Ghosh, *Indian Culture*, IV, pp. 387-399.
[24] P. Thieme, *I.H.Q.*, 1937, pp. 329, 343 and *Indian Culture*, IV, pp. 189-209.
[25] S. P. Chaturvedi, *New Indian Antiquary*, I, pp. 450-459, and K. Chattopadhyaya, *I.H.Q.*, XIII, pp. 343-49.
[26] Ṛktantra (ed. Suryakānta and Burnell, p. 3), "On the Aindra System of Sanskrit Grammarians".
[27] Nirukta 1.12: "The nouns are derived from the verbal stems; this is the opinion of Śāṭkaāyana".
[28] Kāśikā on A.I.4.86: "All grammarians rank after Śākaṭāyana".

(3) Āpiśali, referred to in A. (VI.1.91) and also in Mbh. on A.VI.2.36 as the first of the four great grammarians, Āpiśali, Pāṇini, Vyāḍi and Gautama; Kāśikā on A.VI.2.14 records that Āpiśali was the first man who introduced the heaviness and lightness of vowels; to Āpiśali is also ascribed the treatment of the root "*as*" (to be) as "*s*" by Bhaṭṭoji in his Śabda Kaustubha on the authority of Nyāsa and Padamañjarī; commentaries on Kāśikā; Āpiśali also treats the ablaut terms Guṇa and Vṛddhi as augments and not substitutes, as taken by Pāṇini; Āpiśali has been interpreted to be the innovator of principle of economy.[29]

(4) Śākalya, the author of the Ṛgveda Padapāṭha, is mainly referred to in connection with hiatus or other features of sandhi in A. (I.1.16, VI.1.127, VIII.3.19, VIII.4.51) and also perhaps the writer of Padapāṭha (Padakāra) in A.III.2.23, is presumably concerned with word sandhi. He has been subsequently quoted repeatedly in Ṛk Prātiśākhya as a holder of an archaic view.[30]

(5) Kāśakṛtsna, not directly referred to by Pāṇini, but quoted by Kātyāyana, Patañjali, Kāśikā and Kaiyaṭa (commentator on Mbh).[31]

(6) Gārgya, referred to in A.VII.3.99, VIII.3.20, VIII.4.67, is also referred to by Yāśka as belonging to the verbal derivation school; and in the manuals of phonetics, such as Ṛk and Yajuṣ Prātiśākhyas, he is further referred to by Yāska in 1.3 as propounder of the theory that the prefixes are not mere symbols of meaning but have their own independent meaning.

(7) Gālava, referred to in A.VI.3.61 and VII.1.74, also referred to in Aitereya Āraṇyaka (V.3) and Śaiśiri Śikṣā (as a pupil of Śaunaka, the writer of Ṛk Prātiśākhya); he seems to be a phonetician in the main;

(8) Kāśyapa, referred to in A. I.2.15 and VIII.4.67, also cited in Yajuṣ and Taittirīya Prātiśākhya.

(9–11) Senaka (A.V.4.112), Sphoṭāyana (A.VI.1.123, probably the originator of the plosive theory of words), and Cākravarmaṇa (VI.1.130) are names which are not found outside the A.

0.1.2. Besides these references, from the later grammatical tradition we learn that

(i) Pāṇini's use of the longer terms such as *prātipadika* (nominal stem), *sarvanāmasthāna* (the group of first five declensional suffixes), *sārvadhātuka* (a class of verbal suffix) and *karmapravacanīya* (governing preposition) is only a continuation of the older tradition even at the cost of non-economy.[32]

[29] K. C. Chatterji, *Technical Terms of Sanskrit Grammar*, p. 2.

[30] E.g. Ṛk Prātiśākhya.

[31] See Kātyāyana-Vārtika on A.II.1.51; Mbh. 1.12; Kāśikā V.1.58 and also Kāśikā on A.IV.2.60 (a reference to five schools, Śākatāyana, Āpiśali, Bhāradvāja, Pāṇini and Kāśakṛtsna).

[32] (i) Bhaṭṭoji in Śabda Kaustubha: "It is out of deference to earlier grammarians". – (ii) Kāśikā on A.VII.3.95: "Āpiśali reads sārvadhātukā". (instead of sārvadhātuka). – (iii) Nyāsa on Kāśikā on A.I. 1.42; "It is the ancient teachers who have coined this big technical term for no reason whatsoever (Pūrvācāryaireveyam prayojanamantareṇa mahatī Saṅjñā praṇītā)".

(ii) Pāṇini's innovation lies in defining these older terms not in terms of meaning but in terms of their structural behaviour, as will be illustrated later.[33]

(iii) Pāṇini, for this very reason, described the structure of verbal conjugation not in terms of temporal tense, as he found overlapping of sense of time.[34]

(iv) Pāṇini did away with the four-fold classification of words, *nāma* (nominal), *ākhyāta* (verb), *upasarga* (pre-verb) and *nipāta* (indeclinable) extant in the tradition prevalent in Yāśka's time, and instead introduced a twofold division of words, verb and nonverb.[35]

(v) Pāṇini did not think the phonetic data enlisted by his predecessors to be relevant for a structural analysis, and did not want to use the figurative definitions to his terms. Subsequently the Prātiśākhya traditions, anterior or posterior, whatever they may be to Pāṇini, have very little to contribute to his analysis, except raw text, which has to keep in view half-arranged categorization of certain morphophonemic processes, which appear more irregular then regular in the Prātiśākhya (e.g., the $ṇ \sim n$ and $ṣ \sim s$ alternation is more concise and regular in A. than in any Prātiśākhya). In fact, as rightly pointed out by P. Thieme, the style and presentation of the Prātiśākhya (while referring to Vājasaneya Prātiśākhya) is careless and diffuse if contrasted with Pāṇini's Sūtras, which are hewn, as it were out of stone.[36] Subsequently, he suggests, Kātyāyana (according to Thieme, identifiable as the author of both the Vārttika on A. and Vāj. Prāt.[37]) wrote his Vārttika, "dignified in style and ripe in method", much after he had written the Vāj.[38] The relationship thus between the Prāt. tradition and Pāṇini seems to be a loose one.

(vi) Similarly the Nirukta (etymological) tradition is rather extraneous to Pāṇini, inasmuch as it is more concerned with the speculation in meaning and its development than in analysis of the form. The antecedence of Yāśka has been taken for granted by the scholars, though there is no mention of Yāśka in Pāṇini, nor vice-versa. But the immature nature of the work, partly scientific and partly speculative, makes one believe that Yāśka preceded Pāṇini by more than a century.[39]

0.1.3. In short, it is thus obvious that Pāṇini had to work between sets of extremes of view, one having emphasis on meaning and the other on pronunciation; one set of

[33] Kāśikā on A.1.2.56: "Pāṇini refutes earlier teachers' opinion that meaning should be laid down as a criteria in determining the nature of compounding... The meaning of a word is determined not by any grammatical sanction, it is inherent in it by the usage of the people (tat Pāṇinirācāryaḥ pratyācaṣṭe... Śabdairarthābhidhānam svābhāvikam no pāribhāṣikamaśakyatvāt lokata evarthāvagteh)".

[34] Kāsikā on A.II.6.21 and VI.2.14: "Pāṇinī taught a grammar without a temporal tense (Pāṇinīyamakālakam vyākaraṇam)".

[35] A.I.3.1 for the definition of *dhātu* (verb) and A.I.2.45-46 for that of *prātipadika* (non-verb, non-suffix meaningful unit). See L. Sarup, *The Nighantu and the Nirukta*, p. 54.

[36] P. Thieme, *Pāṇini and the Veda*, p. 98.

[37] P. Thieme, "On the identity of Vārttikakāra", *I.C.*, IV, pp. 189-209.

[38] P. Thieme, *Pāṇini and the Veda*, p. 98.

[39] S. Varma, *Critical study in the Phonetic observation of Indian Grammarians*, p. 2.

views believing in the verbal roots to be the ultimate units and the other dividing words in four categories; one set believing in the connotation of a word in its class and the other in its species; one set believing in the independent meaning of the prefixes and the other in the subsidiary one; one set emphasizing philosophization and the other mere observation.[40] Pāṇini's approach was synthetical as far as acceptance of traditional values was concerned, but analytical as far as his own description was concerned. So he succeeded in reaching the culmination point of the grammatical tradition in his country so much so that his system of grammar became the model for the followers of old systems as well, as is borne out by the general outline of the Cāndra, Śākaṭāyana, Jainendra, Hemacandra's and Bopadeva's grammars.

0.2. THE PURPOSE OF THE A.

0.2.0. Patañjali, in his introduction to his Mbh., enumerated fivefold purpose of the "discipline of words" (śabdānuśāsana) on which he was going to comment, viz.

(1) Preservation (*rakṣā*) of the ritual language in its traditional form;

(2) Capacity of generation (*ūhā*) of forms from one pattern to the other;

(3) Sanctity (*āgama*) of the grammatical science itself as an integral part of the scripture;

(4) Economy (*laghu*) of description, so as to make it possible, in shorter span of time and space, to give a complete analysis of the language, and facilitate memorization;

(5) Clarity or non-ambiguity (*asandeha*) of description, this being a positive check on the fourth purpose.

0.2.1. Looking into A. itself, the purpose seems to be primarily

(i) to describe the language spoken by

(a) a group of priests more familiar with the language of the northern schools of the Vedic tradition, closer to that of the later Vedic prose in structure,[41]

(b) to give the variations wherever necessary, as a sort of footnote device to the main line of description, found in the archaic language used either for ritual or academic purposes (it must be noted that though Pāṇini's date is posterior to the Brāhmaṇas and most of the principal Upaniṣads,[42] he has ignored the linguistic data from the Saṃhitās and Brāhmaṇas of the eastern country, viz., the Vājasaneya Saṃhitā and the Śatapatha Brāhmaṇa, because they were not in vogue in his own linguistic area),

[40] See V. S. Agrawal, *India as known to Pāṇini*, pp. 352-355.

[41] P. Thieme, *Pāṇini and the Veda*, p. 63: "Pāṇini used the material found in the Ṛk Saṁhitā, Taittirīya, Maitrāyaṇī and Kāṭhaka Saṁhitās of the Black Yajurveda and probably even some lost recension of the Black Yajurveda". *Ibid.*, p. 76: "Northern character of Pāṇini's grammar is commonly admitted. (He) is closest to Kāṭhaka School (which was a northern school)."

[42] V. S. Agrawal, *India as known to Pāṇini*, pp. 456-458.

(c) to give some of the views of his predecessors which he does not discard totally out of a feeling of deference towards them,

(d) to give dialect variations mostly in formations of proper names;

(ii) to give a new functional orientation to the units and groups of units used in the description (so that the validity of their inter-relationship may have not to be sought outside the grammar), by defining either in terms of lists enumerated in the grammar or in terms of their common functional behaviour;

(iii) to present the description in a concise style primarily meant for oral transmission (with the result that the later commentators had to assume certain things about the text for interpretation of a certain set of rules), so that a student may have the complete description in a nutshell and refer back and forth in an instance; this has necessitated the use of a peculiar technique which, though economical from the oral standpoint, is less so from the visual one, where one has to write out a whole set of references and cross-references and mark out boundaries of operation of certain rules, before arriving at the exact meaning of a rule (this aspect will be further elaborated in the following Chapters);

(iv) to start from the syntactic relationship and arrive at the phonemic realization as a sentence;

(v) thus to present a mathematical grammar which may be able to generate new forms, as well as to take account of all the extant forms and constructions in his language, without taking recourse to specific illustrations.

0.2.2. Pāṇini's purpose was not in any way to bind down the language to a particular norm, otherwise he would not have been meticulous in details of the different types of sacrificial activity,[43] in the exact nuances in the formation of derivatives from the proper names, and in the niceties of the transformational models set up in the Chapters IV and V of A. The divergence between Pāṇini and his successors is partly due to a gap most probably caused by the political unrest in North Western India in the centuries preceding Christ, and partly to the rapid change in the linguistic situation, when the status of a prestige language was shifted to a predominantly eastern language of the non-priestly class. Pāṇini was therefore naturally misunderstood not as an author of a grammar, but of a language which would lose its sanctity if tampered with.

0.3. PĀṆINI AND THE TEXT OF A.

0.3.0. Pāṇini was born at Śālātura[44] (which remained for centuries a centre of learning), identifiable with present day Lahur,[45] in the angle of the river Kabul meeting

[43] *Ibid.*, p. 379: "The mention of the minute details shows that Pāṇini was in touch with a living tradition of the sacrificial ritual or yajñas."

[44] *Corpus Inscript. Indicarum*, VIII, p. 175.

[45] A. Cunningham, *Ancient Geography*, p. 66-67.

the Indus. His mother's name was Dākṣī, a daughter of the Dakṣa people, who were organized as a Saṅgha (a federation) in North Western India, according to Kāśikā.[46] The name Pāṇini itself is not the first name; it is a family-name, as specified by Baudhāyana,[47] a subfamily of the Vatsa-Bhṛgus. Some lexicons give also Āhīka and Śālaṅki as name of Pāṇini.[48] The traditional story of Śiva revealing to Pāṇini the essence of grammar in the shape of 14 Śiva Sūtras, to serve as a clue to the entire grammar, bears testimony to the independent approach of Pāṇini, whose reputation as the exalted teacher,[49] the superior authority over the works of his predecessors, the teacher of immeasurable compass of intellect,[50] a subtle observer of social usages and their relevance in linguistics,[51] and an author of a vast mass of scientific knowledge,[52] was unparalleled in the whole history of Sanskrit learning. Pāṇini's place became the seat of the learning.[53] His Aṣṭādhyāyī, also known as (i) Aṣṭaka, (ii) Pāṇinīyaṃ, (iii) Vṛttisūtra,[54] (iv) Akālaka (non-temporal grammar),[55] is divided into 8 books (adhyāya), each divided into 4 parts (pāda). The text has been handed down almost intact by the method of oral transmission. It was well observed by Yuan Chwang in the 7th century A.D. "And so, from that time masters have received it and handed it down in its completeness for the good of the world."[56]

0.3.1. Aṣṭādhyāyī has five components:

(1) 14 Pratyāhāra Sūtras;

(2) the main body of description;

(3) Gaṇa-pāṭha (the groupwise list of non-verbal stems, each group serving a common function in the description); Patañjali definitely states that Pāṇini first compiled the Gaṇapāṭha list,[57] a statement confirmed by Yuan Chwang and shown by Burnell.

The order in this group was maintained meticulously, as shown by the minute discussions on the details in the Vārttika, the Mbh. and Kāśikā;[58] Patañjali refers

[46] Kāśikā on A.IV.3.125: "The Dākṣa Saṅgha read with Patañjali's Mbh. I.75 (of Pāṇini the son of Dākṣī – Dākṣīputrasya Pāṇineḥ)".

[47] Baudhāyana, Pravarakāṇḍa VI.4.165.

[48] V. S. Agrawal, *India as known to Pāṇini*, p. 8.

[49] Kātyāyana, Vār. (the last) "So closes the discussion of the exalted teacher Pāṇini (Bhagavataḥ Pāṇineḥ Siddham)". Padamañjarī on A.IV.I.93; *Sūtrakāraśca śabdavidām mūrdhābhiṣiktaḥ.*

[50] Mbh. on A.I.4.51 and I.3.35 "Analpamatir Ācāryaḥ".

[51] Kāśikā on A.IV.276: "mahatī sūkṣmekṣikā" and Mbh. I.3.3.9 "Vṛttajña ācārya".

[52] Mbh. on A.I.1.1: "Pramāṇabhūta ācāryo mahatā yatnena sūtrāṇi praṇayati sma (He laboured incessantly and put forth all this power of mind to organize things)"; and Mbh. on A.I.1.1: "mahat Śāstraugha".

[53] Yuan Chwang, *Siyuki*, p. 115 (Śālātura): "Hence the Brahmans of this town are well grounded in their literary work and are of high renown for their talents, well-informed as to men and things, and of a vigorous understanding".

[54] Mbh. on A.I.3.71.

[55] Kāśikā on A.II.4.21, IV.3.115, VI.2.15.

[56] *Siyuki*, p. 115.

[57] Mbh. on A.I.1.34 and 1.92-93.

[58] V. S. Agrawal, *India as known to Pāṇini*, pp. 26-29.

to two types of groups (gaṇas), the one exhaustive and the other illustrative,[59] an interpolation in the second group only could have been possible, but it must have been checked after its close scrutiny by Patañjali.

(4) Dhātūpāṭha (list of verbal stems divided into ten main subclasses), which in substance goes back to Pāṇini;[60]

(5) the main body of the description, with the three types of consonants classified above, which, according to the author of Svarasiddhāntacandrikā, has 3981 Sūtras.[61] Siddhāntakaumudī has 3965, Böhtlingk's edition contains 3983, Keilhorn observed that the text given in the Kāśikā has twenty more sūtras,[62] which is really either an increase in number and not in substance (by applying the principle of splitting one sūtra into two), or, by introducing some Vārttika as a sūtra, there were a few variations noted even by Patañjali, e.g. "ākver" for "prākver".[63] There are only a few instances of variation in order from that preserved in Kāśikā, (i) A. I.1.29–37 to come after VIII.4.67 according to Nāgeśa,[64] and (ii) A. VIII.4.58–63 to come after VIII.4.52 according to Patañjali.

0.3.2. The erroneous argument of H. Skold that only those sūtras are authentic which have been commented upon by Patañjali falls flat[65] when one looks at it from the angle of real purpose of the Mbh. The Mbh. is not a sūtra to sūtra commentary; it aims at an exposition of only those sūtras that needed clarification or defense. Nevertheless Skold's observation that the last sūtra (VIII.4.68) is extraneous to the A. seems to be well-founded, as this sūtra only gives a phonetic observation that is not relevant to the analysis, and also for another reason, viz., that the preceding sūtra (according to Kāśikā) contains the auspicious word "*udaya*", to mark the close of the book. To deduce from the concordance of the Cāndra Vyākaraṇa that A.I.2.53–57 are spurious[66] would be erroneous, inasmuch as they constitute some of the most important innovations in linguistic theory, without which it would not be possible to follow Pāṇini. For example Pāṇinian idea of non-temporal tense structure referred to in Kāśikā on A.II.4.21, IV.3.115 and VI.2.14, corroborate the evidence for authenticity of A.I.2.57.

0.3.3. It has already been proved beyond doubt that, with the exception of a negli-

[59] Mbh. on II.I.59: "Śreṇyādayaḥ paṭhyante, kṛtādirākṛtigaṇaḥ". See also *J.A.O.S.*, pp. 47-61: "On an accretion and transposition in the Gaṇapāṭha".

[60] A. B. Keith, *History of Sanskrit Literature*, p. 430.

[61] Svarasiddhānta Candrikā, p. 3, verse 15.

[62] *Indian Antiquary*, XVI, p. 184.

[63] Mbh. on A.III.2.134; also some additional variants referred to in Kāśikā on A.III.3.78, IV.1.117, VI.1.156 and VI.2.134; in Padamañjarī on A.IV.3.118 and IV.4.88; and in Siddhāntakaumudī on A.V.2.64 and V.2.68.

[64] Nāgeśa-*Laghu Śabdenduśekhara* on A.I.11.32.

[65] H. Skold, *Papers on Pāṇini*: "The *aa Sūtra*, VIII.4.68 could have been introduced into it by Patañjali who was an easterner." *Ibid.*, p. 23: "Out of 4000 real, only 1720 have been commented upon in Mbh.".

[66] L. Bloomfield, *Language*, V, p. 274.

gible number of instances, the entire grammar is one complete whole.[67] The only objection is as to the Pratyāhāra Sūtras. Skold, taking the clue from Breloer, has unnecessarily tried to compare this arrangement with the arrangement of the Prātiśākyas and to show that these sūtras have no connection with the main body of description.[68] But a close scrutiny of the interrelationship between this list and the grammar in the next chapter will show how inseparable they are.

0.3.4. The main reason as to why the text of the A. remained almost intact was its oral character of transmission, and this was also the main factor in

(i) bringing confusion at the point where the end of a sequence of rules coming under one heading had to be assumed, inasmuch as the definitional circumflex accent marking the jurisdiction of a heading got lost,[69]

(ii) misconstruing of rules wherever the extent of continuity of a particular recurring feature (anuvṛtti) had to be assumed after a lapse of time,[70]

(iii) splitting up of sūtras into different ways, in order to seek their clearer application,

(iv) destroying the hierarchical levels in the analysis and making the description appear as linear,

(v) and thus creating an occasion for framing new rules of interpretation (Paribhāṣā).

0.3.5. It was a matter of doubt, even with the 12th-century A.D. commentator Kaiyaṭa, whether the A. was fully accented with three accent marks or whether it was read in monotone. Nāgeśa, commenting on Kaiyaṭa, accepted the view that the A. was fully accented.[71] Patañjali, while explaining the occurrence of /c/ as word final in his Mbh. on A.I.1.1., has remarked that the A. is a scripture, so it is in a different language, but at the same time, being an analysis of the common language, is itself a common language.[72] On the very face of it this explanation seems to be more apologetic than convincing. The convincing reply would have been that the Sandhi rules apply to the indicatory letters, only so far as they do not make them undifferentiable. Probably the tradition of recitation of the A. split into two different ways, one reciting it in a monotone (as is confirmed by the Eastern tradition of reciting the Śatapatha Brāhmaṇa in monotone to this day), and the other trying to preserve the accent. In the course of time the former swept over the latter, and the commentaries became more concerned with the written rather than the oral form. So the validity of the

[67] L. Bloomfield, *Language*, V, p. 274: "Although Pāṇini's work has a history behind it, it is the achievement of one man".

[68] H. Skold, *Papers on Pāṇini*, pp. 18-22.

[69] E.g. it is sometimes not clear, which is the main heading and which one is the sub-heading within it.

[70] E.g. the controversy over the continuity of context from A.I.1.16 to I.1.19 is only due to this factor.

[71] S. P. Chaturvedi, "On the original text of Pāṇini", *N.I.A.*, I, pp. 562-569.

[72] Mbh. on A.I.1.1.

INDIAN INSTITUTE OF ADVANCED STUDY
Acc. No. 29222
Date 31.1.69

rules, like A.I.3.2 (prescribing that the nasalized vowels of the forms in the description are realized as zero) or A.I.6.56 (prescribing that the words listed before the utterance "rīśvarāḥ" in the sūtra "adhirīśvare", A.I.4.97, are designated as indeclinable, "nipāta") had to be assumed on the authority of the oral tradition. The numbering of the sūtras is therefore a later phenomenon, the earlier form can be assumed to be some sort of juncture which served the function of grouping the rules within one part of a chapter. Another important point to be noted is that the A. for definitional purposes prescribes as circumflex and all the three accents, acute grave.[73] Which syllable will be marked by a definitional circumflex accent in a rule (making it a heading rule) or which one by a definitional circumflex or grave accent in a polysyllabic verbal stem, is nowhere mentioned in the A. This has to be assumed. One might guess for an initial circumflex accent in a heading rule to serve as a well-defined boundary, but about the accent in the verbal form there is no clue.

It is therefore desirable that a visual structure of the memory-image of the A. be reconstructed through the use of appropriate notational symbols. The following chapters are an attempt in this direction.

0.4. THE ARRANGEMENT OF THE A.

0.4.0. Treating the three constants, the Pratyāhara, the Gaṇapāṭha as the Dhātupāṭha as the index register, the main body of the grammar has its arrangement based on the following broad principles:

Book I: General definition and rules of interpretation.

(i) The definitions and rules of interpretation applicable universally and cumulatively to the grammar throughout are brought together in 1–3;

(ii) those where the principle of the following overruling the preceding rule has to be adhered to, are brought together in 4., still they are not of the type of definitions and rules of interpretation confined to one section.

Book II: Substitution and purpose of declension.

(i) Substitution of more than one form by a compound form in 1–2, the treatment of the *Tatpuruṣa* (determinative) compound both in 1 and 2, is to demonstrate the purpose of two-way contrast, and Avyavībhāva (adverbial) versus the rest and *Tatpuruṣa* versus the rest following it;

(ii) the representation of the various types of relational concepts enumerated in A.I.4 and at the level of declension in 3;

(iii) specific rules about gender and number in compound formations, morphologically conditioned irregular alternants of morphs, both non-zero and zero in 4.

[73] See A.I.3.11, I.3.12, I.3.72.

Book III: Primary suffixes.

(i) The general features of a suffix (a) the primary suffixes addable to both verbal and non-verbal stems forming a secondary verbal stem, (b) the primary suffixes addable to the ten classes of verbal stems as a marker of their active sense, (c) the primary suffixes addable to the verbal stems forming a non-verbal stem but functioning simultaneously as replacives of conjugational forms, the agent-marker primary suffixes in 1;

(ii) object-marker primary suffixes addable to the verbal stem forming a non-verbal stem, with or without a compounding; tense-marker suffixes in 2;

(iii) exceptions to general rules of tense and suffixes indicating action and concepts other than agent or object in 3;

(iv) primary suffixes forming an indeclinable non-verbal stem, conjugational suffixes and their allomorphy in 4.

Books IV-V: Suffixes addable to the non-verbal stem forming secondary stem and declensional suffixes (substitution by secondary formation).

(i) Feminine-forming suffixes and declensional suffixes, secondary suffixes indicating the concept of *apatya* (family-name) in IV.1;

(ii) secondary suffixes to serve as substitution for various transformation models in IV.2–V.4.

Books VI-VII: Morphophonemics at the word (pada) level.

(i) Reduplication and its types, reduction, augmentation or infixation, vowel-Sandhi, vowel-accent shift in VI.1.2;

(ii) non-representation by zero and stem-alternation in compound formations in VI.3;

(iii) stem-alternation in suffixation in VI.6;

(iv) suffix-alternation in VII.1–1–50;

(v) stem-alternation in suffixation in the rest of VII.

Book VIII: Miscellaneous.

(i) Doublets and sentence morphophonemics in 1.0;

(ii) residue of the rest of the grammar in 2–4, again is a proof of the fact that the A. had not been written down, and a rearrangement of the material in view of unexplained data would have disturbed the structure. So all such features, most of which either pertain to irregular allomorphy or external Sandhi, have been grouped together in this last part of the book.

0.4.1. It would thus be obvious that there is apparently a looseness from the visual standpoint in this arrangement and also an overlapping, but it is economical in terms of memorization. The explanation given by the traditional grammarians for certain anomalies is mainly from the point of view of the whole grammar as a scripture[74]

[74] See R. S. Bhaṭṭāchārya, "Some anomalies in the A. and their justification", *Bhāratīya Vidyā*, Vol. XV.

rather than a structure. The main trouble with this arrangement was that one had to pass through the entire description before one could generate or explain an utterance. This was the main concern of the later grammarians, like Rāmacandra and Bhaṭṭoji, who rearranged the A. in a manner, so that in every chapter one might reach the final stage of representation. But this arrangement again had to be supplemented by additional notes on the original order of the sūtras. So it did not work well. The re-arrangement called for the purpose of modern linguistic application should separate the levels and break the classifications so as to fit neatly into the general framework, but should still keep close to the order of Pāṇini. In other words, the classification should be more exclusive, such as:

I. Symbols and their Significance.
II. Tactic concepts and their representation.
III. Substitution-types and compounds.
III. Sentence types.
IV. Morpheme classes:
  (i) Stem: (1) Verbal, (2) Non-verbal: (a) declinable, (b) indeclinable.
  (ii) Suffixes: (1) addable to 1 and 2, (2) addable to 1 to make it a non-verbal stem, (3) addable to 1 to make it a finite verb, (4) addable to 2 to make it a secondary non-verbal stem, (5) addable to 2 to make it an inflected word.
V. Morphophonemics:
  (i) Internal,
  (ii) External.

0.4.2. Pāṇini did not add a single illustration to any of his rules, because, as rightly observed by Patañjali, he dealt with the pattern of formation and found out the relation between various elements.[75] His purpose was purely structural and his audience was then native speaker of language, well-versed in the tradition of grammatical description. So he did not concern himself with illustrations or phonetic details which had no relevance to the description.

0.5. THE PHASES IN THE LATER DEVELOPMENT OF THE PĀṆINI SCHOOL

0.5.0. *The First Phase.* – As stated above, Pāṇini wrote only the *Sūtra*, i.e., the principle underlying the description, and presumably he must have transmitted an oral tradition of a detailed commentary on his aphorisms (vyākhyāna) containing (1) the break-up of every aphorism, (2) the illustration for its application; (3) the illustrations where it does not apply; and (4) the continuity of elements from forerunning aphorisms.[76] He was followed by Vajāpyāyana, Vyāḍi and Pauṣkarasādi as attested by the

[75] Mbh. I.11.

[76] Mbh. I.II: "Nahi Sūtrataeva Śabdāḥpratipadyante. kiṁ tarhi Vyākhyanataśca ... na kevalāni carcāpadāni vyākhyānam. vṛdhirādaic iti. Kiṁ tarhi udāharaṇam, pratyudāharaṇam vākyādhyāhāra ityetat samuditam vyākhyānam bhavati".

Vārttika of Kātyāyana.[77] Vyāḍi is said to be the author of the *Saṅgraha*, a work comprising hundred-thousand verses as well as the rules of interpretation, commented on by Nāgeśa Bhaṭṭa (or Nāgoji). Patañjali based his Mbh. on the commentary of Vyāḍi, who is also said to be a younger contemporary of Pāṇini. The tradition appears to have faced some sort of discontinuity for some time, otherwise the wide divergence between Pāṇini and Kātyāyana, as observed by Goldstucker[78] could not have been possible. This divergence is accounted for on two more reasons: first, Kātyāyana is said to belong to the Aindra School,[79] and second, he was a southerner.[80]

Kātyāyana's purpose was not only to doubt the validity of the rules of Pāṇini with reference to the language in use in his time and area, but also to give alternative modifications as addenda, whichever proper, to the rules of Pāṇini. Except for some of his comments, which probably might have been citations from predecessors, he wrote his commentary in prose. The main points of divergence between Pāṇini and Kātyāyana are:

(i) Kātyāyana uses different terms like *svara* (for *a-C*) *vyañjana* (*h-L*), *samanākṣara* (for *a-K*), *bhavantī* (for *LAṬ*), *adyatanī* (for *LUṄ*), which must have been in use in earlier schools of Prātiśākhyas and revived by him. This shows that Kātyāyana could not understand properly the real significance of the definitional terms of Pāṇini, as opposed to terms which has to be restated in terms of their functional behaviour.

(ii) He may be said to be the propounder of the theory of aspects (*upagraha*) and treat *ātmenepada* (middle voice) and *parasmaipada* (active voice), not as grammatical concepts but merely cover-symbols for two groups of conjugational suffixes.[81] Pāṇini had nowhere mentioned this term (*upagraha*). Though Kāśikā finds the occurrence of this term (but of course not in this sense) in a variant reading of A.VI.2. 134, it is obvious from the order of treatment in Pāṇini that, according to him, *ātmanepada* and *parasmaipada* are not endings but tactic relational units.

(iii) Kātyāyana took *ḷ* to be a phonetic element,[82] rather than a morphophonemic element as taken by Pāṇini, keeping in consonance with his own definition of *lopa* (zero) as disappearance of a *varṇa* (a phonetically distinctive unit) in Vājasaneya Prātiśākhya (I.161).[83] This shows that not only was he obsessed by semantics, but also by phonetics. For Pāṇini *ḷ* was not only a phoneme, but also a morphophonemic

[77] Vārttika 35 on A.I.2.62 for Vājapyāyana, on A.I.2.64 for Vyāḍi, 3 on A.VIII.4.48 for Pauṣkarasādi.

[78] Divergence pointed out by Goldstucker on the following grounds: (1) Pāṇinian forms had become obsolete; (2) Meanings had become obscure; (3) Literature known to Kātyāyana had not been known to Pāṇini; (4) Writers contemporary or little separated in time from Pāṇini are looked upon by Kātyāyana as very ancient, e.g. Yājñavalkya (Pāṇini reprint, pp. 94-120).

[79] S. K. Belvalker, *Systems of Sanskrit Grammar*, pp. 10-11.

[80] Mbh. I: "Priyataddhitā hi Dākṣiṇātyāḥ".

[81] See Vārttika on A.III.1.40 and III.2.127, and also K. A. S. Iyer, "On the Concept of *Upagraha* among the *Vaiyākaraṇas*", *J.O.R.*, XXIII, pp. 79-88.

[82] See Vā. on A.I.1.9: "*Ṛkāraḷkārayoḥ savarṇasāñjñā vaktavyā*".

[83] "*Varṇasyādarśanam lopaḥ*".

classifier, so that *l* at the end of the root *gam* could serve the purpose of adding *-a-* after it in the aorist.

(iv) Kātyāyana had (in order to include new forms which had gained currency by his time) to give additional rules or lists.

(v) He also questioned the validity of certain rules (which were later defended by Patañjali), mainly because he did not follow the line of Pāṇini's argument.

Patañjali, who is a successor of Kātyāyana, was probably intercepted by a number of other grammarians, namely, Bhāradvājīya, Saunāga, Kuṇaravādava, Vādava, Sauryabhagavat, and Kuṇi, but he based his commentary most on the Saṅgraha of Vyāḍi. His date is 150 B.C.[84] Patañjali wrote an exhaustive commentary on the A. with threefold purpose, firstly to defend Pāṇini against Kātyāyana, wherever Kātyāyana appeared to him unreasonable; secondly, to discuss threadbare the rationale of the algebra of Pāṇini; and thirdly, to add his own desiderata (*iṣṭi*) to Pāṇini's *Sūtras*. He commented only on about 1700 *Sūtras*, as the others appeared to him too obvious to need an explanation.

He was an easterner. According to the traditions recorded in the Rājataraṅgiṇī and the Vākyapadīya, the text of the Mbh. had become so hopelessly corrupt in the time of king Abhimanyu of Kāśmira, that only one authentic manuscript of it existed throughout India.[85]

Patañjali is noted for the clarity and comprehension of exposition, and the Pāṇinian School treats Pāṇini, Kātyāyana and Patañjali to be a continuous line of "sages of grammar" (munitrayī), so that it is not Pāṇini alone who is to be studied, but Pāṇini as understood by Kātyāyana and Patañjali. This no doubt, enriched the grammatical tradition, but it also helped in a good deal of confusion regarding the original plan of the A. and subsequent divergence from Pāṇini. As will be seen later in this presentation, the explanations and new interpretations become essential, not so much as a help in understanding Pāṇini but as the synthetic tradition of the first phase, culminating in Patañjali's Mbh. The Mbh. was commented on by Bhartṛhari (the author of Vākyapadīya) – unfortunately the work now is lost – and by Kaiyaṭa (Pradīpa) and Nāgeśa (Udyota), and continued to be an important treatise on the A. as well as an independent work on the science of grammar.

0.5.1. *The Second Phase.* – An attempt to revive the tradition of Pāṇini was made by Candragomin towards the end of the fifth century. He went even farther to the extent of improving upon Pāṇini's analysis, trying to make explicit what was implicit in the A. He was attacked by the traditional grammarians, who came out with a very diligent analysis of the works of the three great sages, viz., that such defects as Candragomin tried to find in the Pāṇinian grammar were already implicitly provided for in the usages of the three sages (jñāpaka).[86] B. Liebich in his *Konkordanz Pāṇini-*

[84] See S. K. Belvalkar, *Systems of Sanskrit Grammar*, pp. 32-33.
[85] *Ibid.*, p. 33.
[86] *Ibid.*, p 35.

Candra tried to show that the concordance is a clear evidence for the genuineness of the concordant material, e.g. A.I.2.53–57 *Sūtras* do not occur in the Cāndra grammar[87] and therefore are spurious. This is rather an erroneous deduction, because it does not take into account the obvious fact that Candragomin himself is nine centuries apart from Pāṇini, and, being a Buddhist, was likely to be obsessed more by the logical validity than by the structural concord. Even then, he must be given the credit of provoking of re-assessment of the A. The most fruitful result of this attempt was Kāśikā, written jointly by Vāmana and Jayāditya in the 7th century A.D., who are said to belong to Kāśmīra. The Kāśikā is the fullest commentary available on the A. in the same order, explaining every rule and giving illustrations, norm as well as sub-norm. The Kāśikā marks the peak of the second phase in the development of the Pāṇinian School; it was followed by a commentary Nyāsa by Jinendrabuddhi (8th century) and another Padamañjarī by Haradatta (11th–12th century A.D., probably of the Tamil region). The Kāśikā is clearly inspired by the Cāndra grammar in such a degree, that sometimes it even reads the rule of Pāṇini in conformity with the Cāndra grammar.[88] The second phase is thus marked by an unorthodox analysis of the A., with a view to find a logical link between the various parts of the A. This is indeed very valuable, as it gives to a modern reader the references and cross-references to the algebraic symbols, the jurisdiction of the continuum of the preceding sūtras – and illustrations (of course, mostly from the extant works like the Mbh.). But at the same time this second phase (if we include the Vākyapadīya in this) is also marked by an attempt to set up grammar as a system of philosophy. So the linguistic vision is to some extent coloured by this trend of philosophization, with the result that the clear concept of the first phase, viz., that "*Vyākaraṇa* (grammar) is not confined to any particular Veda"[89] and that "the grammarians go by what the words present rather than by how things really are",[90] was changed into the idea that "it is common to all the systems of philosophy", and "often an idea belonging to some system of philosophy is made use of to explain and justify a particular idea of grammar".[91] This may be due to the Buddhist influence on the second phase, and is worth investigating into.

0.5.2. *The Third Phase.* – The third phase starts with the Rūpamāla of Vimala Sarasvatī (1330 A.D.), which aims at rearranging the material of the A. in a reverse order, i.e., first giving the rules of morphophonemics and then word-formations of different types (declension, feminine suffixes, case-relationship, conjugation, primary derivation, secondary derivation, and compound). This became the prototype for the

[87] B. Liebich, *Konkordanz Pāṇini-Candra*, "Introduction".
[88] See S. K. Belvalkar, *Systems of Sanskrit Grammar*, p. 38.
[89] See K. A. S. Iyer, "The Point of View of the *Vaiyākaraṇas*", *J.O.R.*, XVIII, pp. 84-96, p. 86; and Mbh. on I.1.58. "Sarvavedapārişadam hīdam Śāstram".
[90] *Ibid.* (K. A. S. Iyer, p. 86) and Mbh. on A.III.1.1: "Śabdapramāṇakā vayam, Yacchabda āha, tadasmākam pramāṇam".
[91] *Ibid* (K. A. S. Iyer, p. 86).

Prakriyākaumudī of Rāmacandra (of the 15th century A.D.) and the most mature work in this direction, the Siddhānta Kaumudī of Bhaṭṭoji Dīkṣita (1630 A.D.). This tradition, fostered by the disciples of Bhaṭṭoji and their followers, replaced the earlier ones by its force of precision and independence from any extraneous discipline. This is still a living tradition in India, particularly in the Eastern U.P. The names of Nāgeśa and Kauṇḍa Bhaṭṭa are very prominent, as they are the propounders of the theory of this Neo-grammarian Pāṇinian School (Navya Vyākaraṇa). Besides the new arrangement necessitated by the fact that Sanskrit no longer remained a living reality, and the final level of utterance had to be analyzed before trying to generate forms, the main contribution of the new school is in

(1) showing clearly how the rules operate in a specific order and how passing through various stages a particular formation is realized;

(2) redefining every term and process of the A. so as to prove it to be consistent and self-evident;

(3) propounding the theory of *sphoṭa* (the imperishable factor that brings a cognition of an utterance).

Thus this school is structuralist on the one hand, and logicist on the other. As such this is a matter that has to be investigated both from the viewpoint of structural linguistics and symbolic logic.

0.5.3. *The relevance* of this brief survey of three phases in this introduction is merely to show that Pāṇini and the Pāṇinian School can be studied separately. As stated before, the intention is not to go into the details of the school here.

0.6. SYMBOLS AND ABBREVIATIONS USED IN THIS ANALYSIS

0.6.0. Symbols used herein (mainly in conformity with the technique of Pāṇini) are explained below:

(1) Italicized words or terms indicate that they belong to Sanskrit grammar or language, e.g. *pada* (word); wherever deemed necessary an English equivalent is given within brackets or vice-versa;

(2) A capital letter, if italicized, stands for a classifier (*it*) e.g. *P* in *suP*, and, if with quotation-marks, it stands for a classifier represented by another phoneme representing a group, e.g. '*JH*' in '*JH*'*i*, otherwise as detailed below.

Symbols	The symbolized it stands for	Illustration
S	Suffix	*suP*
BV	Verbal Stem	*bhū*
B	Non-verbal Stem	*kavi*
B_o	Non-verbal indeclinable Stem	*alam*
I	Inflectional	*sU* (Nom. sing.)
D	Derivational	*tavyaT*

Symbols	The symbolized it stands for	Illustration
SBV	Suffix addable to BV	*tavyaT*
SB	Suffix addable to B	*ṬāP*
SBV → BV	Suffix addable to BV to form a BV	*saN*
P	Pada (word, inflected form)	*rāmaḥ, karoti*
P_0	Indeclinable word	*kṛtvā*
P_1	Finite verb form	*tiṣṭhati*
P_2	Non-verb form	*rāmaḥ*
〈 〉	Sememic entity or entities	*bhāva*
{ }	Morphemic entity or entities	*suP*
// //	Morphophonemic entity or entities	n of *ana*
/ /	Phonemic entity or entities	*a* of *a-K*
~	Replacement or alternant for	zero ~ *su-P*
- (hyphen between two letters)	A group (pratyāhāra)	*a-K*
Ø	Zero	
]	After	
[	Before	

0.6.1. Abbreviations used are given below:

A.	=	*Aṣṭādhyāyī*	aug.	=	augment
Mbh.	=	*Mahābhāṣya*	nom.	=	nominative
Pari	=	*Paribhāṣendu-śekhara*	gen.	=	genitive
Ka.	=	*Kāśikā*	loc.	=	locative
JAOS	=	*Journal of the American Oriental Society*	accus.	=	accusative
			ag.	=	agent
S.K.	=	*Siddhānta Kaumudī*	poss.	=	possessive
Vā.	=	*Vārttika*	instr.	=	instrumental
JOR	=	*Journal of Oriental Research*	abl.	=	ablative
Lg.	=	*Language* (Journal)	dat.	=	dative
I.C.	=	*Indian Culture* (Journal)	chand.	=	*chandas* (Vedic dialect)
N.I.A.	=	*New Indian Antiquary*	gr.	=	variation according to other grammarians
I.H.Q.	=	*Indian Historical Quarterly*			
I.A.	=	*Indian Antiquary*	*	=	implicit through context

CHAPTER 1

THE NATURE OF RULES OF PĀṆINI

1.0. THE GENERAL FEATURES OF A PĀṆINIAN RULE

Pāṇini composed his rules in the Sūtra style which is defined as "one which is brief but unambiguous, concise but comprehensive, impersonal and objective".[1] This style was a fashion of his age and was used for the doctrination of the various philosophical and liturgical texts. In a certain way this style is just the counterpart of the expository style of the Brahmanas, where a simple statement had to be supported by a string of illustrations and episodes, and quite often by speculative explanations. This is also different from the style of the Upaniṣads in as much as it does not follow the repetetive technique employed in them for the sake of emphasis and also of paradox which gives a mystical colour to them.

The Sūtra style is marked by

(1) an absence of verb predicates (which are either implied or expressed by the non-verbal predicate);

(2) a careful avoidance of repetition of the same term in a string;

(3) use of technical terms which are defined in the introduction and which are pertinent only for the particular subject;

(4) use of technical devices which help in making out the sense; and

(5) abstraction from a series of observations through categorization.

Pāṇini's style is still more specialized than that of the other treatises, as it is not a chain of logical arguments and counter arguments but a full description of an organized mass of concrete data from a living speech (in other words, it is an abstraction in scientific and not philosophical terms). Pāṇini had therefore to be utterly clear and at the same time he had not the obligation to give reasons for the arrangement. He therefore devised algebraic notations and assigned functions to them. He cautiously avoided every chance to define anyone of his classifications or symbols in terms of some extralinguistic definition. Either he gave a distributional definition or an enumerational definition, e.g., he classifies the suffixes (addable to the non-verbal stem. viz. the feminine, the declensional and the secondary derivational suffixes) on the basis of their distribution class *prātipadika* (non-verbal stem),[2] or after having

[1] "*Alpākṣaramasandigdhaṃ sāravad viśvatomukhaṃ Asthobhamanavadyañca sūtraṃ sūtravido viduḥ*".

[2] A.IV.1.1 "*Ṅyāp prātipadikāt*" read with A.IV.1.2 and A.IV.1.76.

defined the verbal stems and affixes by listing, he defines the non-verbal stem as the meaningful element which is neither a verbal stem nor an affix.[3] In order to obtain maximum economy in audial terms, he employed the following devices:

(1) Definition (Sañjñā) of

(a) grammatical terms already in use by relational function as in the case of *kartṛ*[4] (agent) and *karma*[5] (goal), or by enumeration under one heading as in the case of *avyayībhāva*[6] (adverbial compound), or by listing as in the case of *dhātu*[7] (verbal stem), or by substitution by an element sharing common function as in the case of the secondary verbal[8] and non-verbal stems,[9] or by elimination as in the case of non-verbal stems,[10] or by grouping a common feature of substitution, elision or augmentation under one heading as in the case of *guṇa*[11] (strong grade) or *lopa*[12] (elision);

(b) algebraic notation to denote

(i) a group of forms by means of joining the first of the first member (which is real) and the last of the last member (which is unreal) as in the case of *pratyāhāras*[13] (morphophoneme groups), viz.,

$$//a \text{ ——— } \dot{N}_1 // > //a\ i\ u// > / \begin{array}{llll} a & \bar{a} & \bar{a}_3 & \tilde{a}\ \tilde{\bar{a}}\ \tilde{\bar{a}}_3 \\ i & \bar{\imath} & \bar{\imath}_3 & \tilde{\imath}\ \tilde{\bar{\imath}}\ \tilde{\bar{\imath}}_3 \\ u & \bar{u} & \bar{u}_3 & \tilde{u}\ \tilde{\bar{u}}\ \tilde{\bar{u}}_3 / \end{array}$$

each representing the 3 pitch levels or in the case of declensional suffixes *sup*,[14] viz.,

$$\{sU \text{ ———— } P\} > //sU \quad au \quad Jas$$
$$am \quad auṬ \quad Śas$$
$$Ṭā \quad bhyām \quad bhis$$
$$Ṅe \quad bhyām \quad bhyas$$
$$ṄasI \quad bhyām \quad bhyas$$
$$Ṅas \quad os \quad ām$$
$$Ṅi \quad os \quad suP //$$

(ii) a group of forms or functions by the abstraction of common feature of representa-

[3] A.I.2.45 read with I.2.46.
[4] A.I.4.54 read with A.I.4.55.
[5] A.I.4.49 read with A.I.4.50-52.
[6] A.II.1.6-21 as definition of A.II.1.5.
[7] A.I.3.1 "*bhūvādayo dhātavaḥ* (*bhū* etc. are *dhātu*)."
[8] A.II.1.32 "*sanādyantā dhātavaḥ* (forms ending in suffixes *san* etc. are *dhātu*)."
[9] A.I.2.46 "*kṛttaddhitasamāsāśca* (forms ending in primary and secondary suffixes and compound forms are also *prātipadika* non-verbal stems)."
[10] A.I.2.45 "*arthavadadhāturapratyayaḥ prātipadikaṃ* (That which has a meaning and which neither a verbal stem nor an affix is a non-verbal stem)."
[11] A.I.1.2 "*adeṅ guṇaḥ*" (*a e o* are called *guṇa* – strong grade substitution)".
[12] A.I.1.60 read with I.1.61,
[13] Śiva Sūtra 1.
[14] A.IV.1.2.

tion as in the case of zero (*lopa*) called *LU* applying to three types of Zero, viz., *ŚLU LUK LUP*[15] or in the case of feminine suffix *Ṅī* standing for *ṄīP ṄīṢ ṄīN* in A.IV.1.1. Hereafter such groups will be symbolized by an X placed after them.

(iii) a group of forms by the common initial or final morphophoneme as *u* in A.III.1.125 by the force of A.I.1.72, hereafter such groups will be symbolized by an X preceding them in final or – following them if initial.

(iv) a group of forms by the common morphemic classifier (*it*) as in the case of *Śap ŚyaN ŚLU Śna Śnu Śa ŚnaM*[16] being grouped as *Ś*-marked class (sharing all the functions of *Ś*).

(v) a particular element in a group of elements having a definite function assigned to it which cannot be statable precisely by a lexical word, the function having no relevance in the semantic area, such as *bha* (internal component)[17] or *ṭi* (final syllable)[18] or *ghu* standing for the verbal stems *dā dhā* (excluding *dāP*).[19]

In order to distinguish the sounds used as algebraic symbols from the real sounds of the language, Pāṇini used either the device of an additional feature of nasalization as in the case of vowel algebraic symbols,[20] or the defined location of these sounds especially when they are consonants or a group of sounds.[21] In order to make these symbols of his metalanguage look unamibiguous and transparent, he does not apply his own rules of Sandhi wherever they can bring ambiguity, e.g., he retains final *C,Ñ* in his metalanguage words against his own rule A.VIII.2.30 (demanding an alteration with the corresponding velar). However, he applies sandhi rules on these symbols so long as there is no chance of confusion either due to context or uniqueness, e.g., in A.IV.1.1 "*ṄyāP prātipadikāt*"; the break-up of *ṄyāP* into *Ṅī* + *āP* is warranted by the context, there being no *Ṅi-* or *-āP* group of forms in that context. Even then sometimes the confusion is inevitable in an oral transmission, as in A.IV.1.4 *AjādyaTaṣṬāp* (*Ṭāp* added to that which belongs to the group starting with *aja* and which ends in *-a*), it might be doubted whether the term *ajādi* refers to "that which beginning with a vowel (*a-C*)" or "that which begins with *aja*". In fact the significance of the second condition (ending in *-a*) becomes redundant in view of the fact that all the words in the *ajādi* group end in *-a*. In such cases (which are very rare and will be pointed out when a detailed presentation is given) the clarity of meaning is ensured by the intention of the author from his following illustration, in this case, being not to enlist a form for the purpose of feminine formation on the basis of the initial feature of a base form.

(2) Rules of application or interpretation (the mode of operation) of the rules in general (*paribhāṣā*) are of five kinds:

[15] A.I.1.60, I.1.61, I.1.63.
[16] A.III.1.68-83.
[17] A.I.4.18-19.
[18] A.I.1.64.
[19] A.I.1.20.
[20] A.I.3.2.
[21] A.I.3.3-8.

(1) Rules determining order and successive force or application, e.g., A.I.4.2 (vipratiṣedhe paraṃ kāryam), the later rule is to be enforced when there is a contradiction of a former rule by a later rule.

(2) Rules determining the environment and target of operation, e.g., A.I.1.66 and A.I.1.67 (locative singular case ending indicates the following, the ablative singular case ending indicates the preceding environment).

(3) Rules determining the jurisdiction of a chain of rules, e.g., A.I.3.11 (the heading of a description is marked by the boundary of a circumflex accent).

(4) Rules explaining the use of symbols, e.g., A.I.1.70–72.

(5) Rules defining the structure of the analysis, e.g., A.I.1.62 (even though the affix is realized as zero, the functions assigned to its classifers are to be brought in operation).

The rules which are applicable to the entire analysis have been placed in Chapters I and II, whereas those applicable to only a part of the description have been placed in the concerned part of the book. In the present study, however, they have all been grouped together. With passage of time, and due to discontinuity in tradition, obscurity in application of the rules and some other rules of application crept in on the basis of (1) their implicitness in Pāṇini's own usage (*jñāpaka*), (2) their validity derived from common sense (*laukika nyāya*), and (3) thier self-evident nature (*vācanika*),[22] had to be framed by the successors of Pāṇini.

Most of these rules were propounded either by Kātyāyana or Patañjali, but some more additions were made.[23] Later on Nāgeśa Bhaṭṭa in his Paribhāṣenduśekhara has critically examined all such rules of application. A great number of these rules throw more light on the tradition of interpretation of Pāṇini than on Pāṇini himself.[24] So in the main body of the present study only such derived rules of application have been added to the list of Pāṇini's explicit rules, which seem to apply to Pāṇini's language. The rest of them have been ignored.

(3) Chain technique (*anuvṛtti*) in order to effect maximum economy operating through

(a) a heading indicated by a circumflex accent, which in turn itself can be a subheading of a main heading, e.g., A.III.1.1 "*pratyayāt*" (Affixes) is the main heading which runs through the chapters III-V, but A.III.1.91 "*dhātoḥ*" (after a verbal root) is a subheading, of which again A.III.2.84 "*bhūte*" (to indicate the past sense) is a sub-sub-heading; thus the clear demarcation of the continuity of one particular heading or sub-heading is a following heading or subheading, and within its jurisdiction this has "the pervasive force of elucidating just as a bright shining lamp illuminates a whole house".[25]

(b) a complete continuity brought by the particle "*ca*" (= and) "just as a piece of

[22] F. Kielhorn, *Paribhāṣenduśekhara*, Part II, p. iv "Preface".

[23] *Ibid.*, p. i.

[24] *Ibid.*, p. xxiii.

[25] Mbh. on A.I.1.49: "*Kaścidekadeśasthaḥ sarvaṃ Śāstramabhijvalayatiyatha pradīpaḥ sarvaṃ veśmābhijvalayati.*"

wood is through a rope dragged from one place to the other",[26] e.g., A.I.4.54 (*śva-tantraḥ kartā* = the agent is one which is independent) followed by A.I.4.55 (*prayojako hetuś ca* = and that which is the indirect cause of the agent) being joined by "*ca*" (and) carries the force that "the indirect cause of the 'agent' is also 'agent'".

(c) a partial continuity brought by taking only part of a preceding rule and joining it with the following rule,[27] e.g., only the *karmaṇaḥ* etc. (the goal concept) from A.III.1.7 is taken as a continuum in the succeeding rule A.III.1.8 and not the rest "*dhātoḥ*" (after a verbal stem).

(d) an interrupted continuity (like the hopping of a frog – *maṇḍūkapluti*) operating after an intervention, e.g., from A.III.1.8 – *supa ātmanaḥ KyaC* (after a declensional form *KyaC* is added to indicate the desired goal of itself), everything continues in the following A.III.1.9 – *KāmyaCca* (and also *KāmyaC*); but in the following A.III.1.10 *upamānādācāre* (to indicate the sense of one's goal functioning like something else), the suffix *KyaC*, and not *KāmyaC*, is added.

This chain technique became a real problem when the oral tradition had been broken, and the exact boundary of one chain became at times confused. But if the exact significance of the particles and their placement in the rules is closely looked into, we find the clue to the exact force of continuity. In the following chapter, "Application of rules", this has been dealt in detail.

(4) The use of third person singular conjugational form of a verb to indicate a transformational kernel sentence model, where the exact connotation cannot be made clear otherwise (the use of a conjugational form otherwise is conspicuous by its absence in Pāṇini), e.g., A.V.1.16 "*tadasya tadasmin syād iti*" (that may "belong to this" or that may be "in this" – to serve as a substitute for these two kernel sentences, secondary derivational suffixes X_1 X_2 ... are added to the member of the class "this").

1.1. THE MAIN CATEGORIES OF THE RULES

The rules fall broadly under two categories:

(a) those that pertain to the technique of description, which include (i) *sañjñā* (definition), (ii) *paribhāṣā* (application) which includes *anuvṛtti* (chain technique), and (iii) headings and subheadings that include the kernel sentences referred to above;

(b) those that pertain to the description itself.

Both of these rules are further classifiable as follows:

(i) General rule (*utsarga*),

(ii) Exception (*apavāda*), which can be either obligatory replacement (*atideśa*), or optional replacement (*vibhāṣā*), or partial variation in the non-core language of analysis (Vedic text, Vedic ritual or dialects).

[26] *Ibid.*: "*aparodhikāro yathā rajjvāayasā baddhaṃ kāṣṭhamanukṛṣyate tadvad anukṛṣyatecakāreṇa.*"

[27] *Ibid.*: "*aparodhikāraḥ pratiyogaṃ tasyānirdeśārthan iti yoge yoga upatiṣṭhate.*"

Again from the point of view of force or order of operation, another classification has been rightly made by Patañjali: (1) the inner layer rule (*antaraṅga*), and (2) the outer layer rule (*bahiraṅga*). The layering is structurally comparable to that of "constituents" in modern linguistics. For details, the famous article "Immediate Constituents" by Rulon Wells in *Readings in Linguistics* may be looked into.

The detailed analysis of the technical rules follows in the following chapter. So here it may be sufficient to indicate only that the rules operate in a string in the A., so that one has to go on and on, till one reaches the end of the A, e.g., in order to generate a feminine nominative singular form from the verbal stem *bhū* (= to be existent) and to indicate that which pertains to its past action, we have to operate with the following technical rules:

(1) *bhū* is a verbal stem from A.I.3.1.

(2) It can take a primary suffix under the heading A.III.1.1, subheading A.III.1.91, suffix defined by III.1.2.4, primary suffix defined by A.III.1.93: *bhū* + *kṛt* (primary suffix).

(3) It takes optionally a past tense action primary suffix after a verbal stem through the force of A.III.2.84, which is one of the two (*Kta* and *KtavatU*) from A.I.1.26 particularized by A.III.3.114, viz., *Kta*, and makes the form a neuter gender from through A.III.3.114 itself > thus *bhū* + *niṣṭhā* (past participle (*kṛt*) *bhū* + *Kta* (neuter gender stem formative).

(4) The stem thus formed is non-verbal through A.I.2.45 read with A.I.2.46. (*bhū* + *Kta*) is a nonverbal stem (neuter).

(5) the whole becomes a constituent for a secondary derivational suffix (*taddhita*) through the force of A.IV.1.1 read with A.IV.1.46 and A.IV.1.82 (((*bhū* + *Kta*) *prātipadika* (non-verbal stem) – *neut.*) + *taddhita*).

(6) This suffix is '*ṬH'aK* through the force of A.IV.1.1 read with A.IV.1.61, and and forms the whole as a non-verbal stem again through the force of (4) above > (((*bhū* + *Kta*) *prāt* . neut.) + '*ṬH'aK*) non-verbal stem.

(7) This whole constituent takes a feminine suffix *ṄīP* by the force of A.IV.1.1 read with A.IV.1.3 and A.IV.1.15 > (((((*bhū* + *Kta*) *prāt*. neut.) + '*ṬH'aK* non-verbal stem) + *ṄīP*).

(8) This whole constituent singular takes *sU* for the nominative through the force of A.I.4.54 read with II.3.46, A.I.4.102-104 > (((((*bhū* + *Kta*.) *prāt*. neut.) + '*ṬH'aK*) *prāt*) + *ṄīP*) + *sU*). Now the morphophonemic operation will start.

(9) The *K* of *Kta*, the *K* of '*ṬH'aK*, the *Ṅ* and *P* of *ṄīP* are designated *it* (classifier) and are realized as zero through the force of A.I.3.1–2, 8–9 and A.I.1.60, but each one has the following functions to perform (1) *K* of *Kta* prevents the *guṇa* or *vṛddhi* (full or lengthened grade) of the stem; (2) *K* of '*ṬH'aK* brings *vṛddhi* (lengthening) of the first vowel of the constituent of the secondary suffix through the force of VI.14.1, VII.2.114 read with VII.2.117–118, *vṛddhi* replacement of *ū* in this case being *au* through the force of A.I.1.1, I.1.3, I.1.49–50; (3) the shift of accent is operated between the immediate constituents till it reaches the final utterance level. This example will

illustrate how one has to operate through the entire corpus of descritpion, before reaching the final level of the actual utterance. One has to refer back to general technical rules and refer forward to specific rules, exceptions which overrule the force of the rule concerned, and one has also to reconstruct the full rule adding the components implicit from continuity and context. Thus every rule is closely related with the entire framework of the description and cannot be isolated from it. This necessary interdependence of the rules is a feature which has kept the A. intactly preserved, though in some respects it has also presented an unsurmountable difficulty in application, when one does not have the complete grammar at the end of one's fingers.

1.2. THE MAIN COMPONENTS OF A RULE

Except for the rules, where a finite verb is needed to illustrate the substitutive transformational model in the 3rd person singular, Pāṇini uses regularly a sentence having a non-verb predicate. The sole exception is A.III.3.2, where *dṛśyante* (are observed), a conjugational form, is a part of the description. This is evidently with the intention that the rules enunciate truths based on observation. So they are rather statements than injunctions (unlike the type that we find in the *Gṛhya Sūtras* or the *Dharma Sūtras*). Nor does he ever use the ablative case-ending to indicate a logical syllogism, simply bacause his rules are not of the inferential nature. It shows clearly how far a linguistic analysis is different from a philosophical discourse. Everywhere in his rules the verb-form "is" is implicit, as the rules referring either to technique or to the main description are in terms of his own synchronic analysis and not in terms of what the form was or what it should be. So the framework of his sentence is precisely mathematical, every rule is one step, sometimes an independent step, or the beginning of another set of steps, but usually it is dependent on the steps preceding and following it, so that his whole grammar is one indivisible statement. The order of every word in the rule is important, and so is the inflectional ending of every word.

The order of the components of a rule:

(1) The concordant predicate of the term or the feature under definition or description is placed first, unless a very special indication is intended, as in A.I.1.1, where the word *vṛddhi* is placed first, though it is the term under definition because it is an auspicious word. This concordant predicate is replaced by words implying option (*vā, vibhāṣā*) or exception (*na*) wherever required. It is also substitutable by its expansion into a non-verbal phrase as well as by a non-concordant non-verbal phrase.

(2) The second in order is the term or the feature under definition or description.

(3) The third is the conditioning factor for the definition or description, if any.

(4) The last is either a connective (*ca* or *vā* or *anyatarasyām* = and, or) if required.

Usually one or many of these items are implicit in the context and have to be linked up with the statement in the rule concerned.

1.3. THE SIGNIFICANCE OF THE INFLECTIONAL ENDINGS

1. Nominative (usually singular) ending indicates the term or feature under definition or description. Wherever there is a plural ending, it indicates either a group of heterogenous terms or features, or an unlimited number of similar items, e.g., in A.IV.1.76, where the plural ending after *taddhita* is an indication for inclusion of extended formations of the same order and type. The concordant predicate usually has a gender, number and case agreement, but sometimes when it represents more than one element, it is inflected for number, dual or plural, as the case may be.

2. Ablative (usually singular) ending marks the feature concerned to be the preceding environment (A.I.1.67) in terms of tactic concept or actual stem or suffix or morphophonemic or phonemic element. Only in A.I.2.53–54, 56, it stands as an indication of inferential reasoning. Ablative ending has also been used to indicate the general concept of ablation in between the components of a predicate to the description, e.g., in A.I.1.65 "antyāt" has an ablative ending to make it a part of the phrase "*alaḥ antyāt purvaḥ*".

3. Genitive ending after the word functioning as the head of a predicate indicates that the feature concerned is the one that is stated as "to be replaced by"; A.I.1.49. But like the ablative ending, it functions for its general possessive force after a form which is a non-nuclear constituent of a predicate.

4. Locative ending has four definite functions to perform:

(a) When it is added to a word signifying some broad heading or area of description, and indicates in the situation or in the occasion (*viṣaya saptamī*);

(b) When it is added to a word signifying environment in operation and indicates the following one (A.I.1.66);

(c) when it is added to a word indicating some condition (*nimitta saptamī*) which belongs to the stratum different from that under description;

(d) when it is added to a preceding element in a primary suffix formation (A.III.1.92).

5. Instrumental ending indicates either (a) the other member in a compound, or (b) the usual concept of the instrumental.

The symbols of the metalanguage are also inflected, but they do not follow the following descriptive rules, in order to look unambiguous:

1. The final phoneme, even though in a word final, does not alternate, as required by A.VIII.2.30.

2. The forms, though indeclinable in the actual language, when used as a citation form get declensional suffixes, as they do not behave like an indeclinable but as a citation form, e.g. *katham* is inflected for the locative in order to look as the preceding environment in a primary derivation (in accordance with the definition A.III.3.143).

3. The verbal stems are also likewise inflected as non-verbal stem, when treated as a citation form, either in the abstract shape in which it is read in the verbal stem list (*dhātupāṭha*), or in the realizable form, or in the 3rd person singular form of the present indicative.

4. Some monosyllabic abstract suffix forms like *a*, *Ka* are not inflected for nominative singular, lest they might be confused for forms like *as* and *Kas* (A.III.3.102 and A.III.3.83).

5. Some monophonemic symbols have *-a* added to them whenever this is desired from the point of view of pronouncing it in combination, for example every consonant in the *Śiva Sūtras* has an *-a* added to it. Similarly the verbal stems have for the same reason *-a* added to them, e.g., in A.III.3.107 *ās* has *-a* added to it, in order to mark clearly its boundary from the following *śranth*.

Thus it will be evident that the various components of a Pāṇinian rule are clearly defined in terms of their position and specific structural behaviour, as different from the common language.

The alphabetical indices of grammatical symbols used in the A. are given in the indices on pp. 130-172 of the present work.

CHAPTER 2

THE TECHNICAL RULES OF PĀṆINI: GROUPING

2.0. GENERAL OBSERVATIONS

2.0.0. The technical rules fall into 2 broad categories:

(1) those that apply equally to all sections (a) without being overruled by the following rules, in case there is contradiction, and (b) those which are overruled;

(2) those that apply to a particular section.

The first category of rules is put together in the first two chapters, the second one is spread over in the sections concerned. The second category also includes the sectional headings and sub-headings. The category (1) (a) and (b) are separated by the rule A.I.4.1, after which, whenever the same form gets more than one definitional designation, it is the later that is applicable and not the former, e.g., A.I.4.59 overrules the preceding rule 58, thereby indicating that, when the term *upasarga* (pre-verb) applies to the forms *pra* etc., the previous designation *nipāta* (enclitic) does not apply, but the term preverb *(upasarga)* does not apply to *ca* etc. designated *nipāta* in I.4.57, because I.4.59 contradicts only I.4.58, the immediately preceding rule.

2.0.1. However, the rules put together in VIII.2.4 till the end of the book, form a group in themselves in so far as,

(i) whenever they seem to contradict a rule in the preceding portions of the book, they are ineffective in overruling the earlier one.

(ii) within this portion itself a later rule does not overrule a former one, except when it is an exception to that (general rule).

(iii) the definitional rules of the first three sections of the first chapter of course do apply to this portion, but neither the descriptive rules of the remaining chapters apply to this portion, nor such definitional rules which have a specific purpose in relation to a rule belonging to the portion between A.I.4.1 and A.VIII.2.1.

The illustrations discussed in the commentaries on A.VIII.2.1, reveal one thing, viz., that the purpose of the *tripādī*[1] is to provide a layer which is not colinear to the

[1] H. E. Buiskool, *The Tripādī*, p. 52: "As to formation at such stage of development as has been reached entirely according to sūtras contained in I-VIII, may be started from experience that any sūtra may apply. Accordingly the further development of such a form may be effected not only according to subsequent as well as to preceding sūtras, but also according to subsequent or preceding sūtras".

rest, so that the operations of the remaining part of this book take into effect as if the *tripādī* had not been in existence, but not vice-versa. It is a sort of residue which does not go into the circle of operations; e.g., after the elision of *-y* before *-u* has taken place by the force of A.VIII.3.19 in instances like *asmai uddhar* > *asmāy uddhar* > *asmā uddhara* and *dvau atra* > *dvāv atra* > *dvā atra*, the operation of the *Guṇa* Sandhi in the first (by VI.1.87) and that of the Dīrgha (contraction) Sandhi in the second (by VI.1.101) cannot take place, simply because the rule of the Tripādī does not fall into the circle. It is a sort of an outer circle which has the force of putting a stop on the circular rotation of operation of rules, but at the same time it is linked up with the inner circle, in as much as it is governed by the general rules under definition and application, and also takes into account the operations performed before.

2.0.2. Pāṇini used this device mainly for two reasons:

(1) in order to take care of such exceptions which, when put in the circle of earlier operations, would have disturbed the circular rotation and would have made the statement clumsy;

(2) in order to take care of the exclusive features of external Sandhi such as sentence Sandhi or phrase Sandhi.

2.1. THE ŚIVA SŪTRA GROUPS

2.1.0. The *Śiva Sūtras* are the first group-formers. The *Śiva Sūtras* as given below give the chart of phonemes or group of phonemes or classes of phonemes arranged in a manner so as to fit in the structure of the analysis in the main body:

(1)	*a*	*i*		*u*				*Ṇ*[1]	(8)	*jh*			*bh*				*Ñ*						
(2)	*ṛ*	*ḷ*		*K*					(9)				*gh*				*ḍh*		*dh*	*Ṣ*			
(3)	*e*	*o*		*Ṅ*					(10)	*j*		*b*	*g*	*ḍ*			*d*		*Ś*				
(4)	*ai*	*au*		*C*					(11)	*kh*			*ph*	*ch*			*ṭh*		*th*	*ç*	*ṭ*	*t*	*V*
(5)	*h*	*y*	*v*		*r*	*Ṭ*			(12)											*k*		*p*	*Y*
(6)	*l*					*Ṇ*[2]			(13)					*ś*	*ṣ*			*s*		*R*			
(7)	*ñ*	*m*	*ṅ*		*ṇ*	*n*		*M*	(14)					*h*			*L*						

The italicized capital letters are called *anubandhas* by the traditional grammarians, but Pāṇini calls them, by virtue of their occurring as the form-final marker consonant, *it* (A.I.3.2). So, like other such markers or classifiers, they are such notational symbols which, though being unreal and therefore disappearing when the actual utterance is to be realized (by applying A.I.3.9 read with A.I.1.60), serve to signal either a group of forms or their functions. Here we have all the voiceless stops of Sanskrit as markers, except T and P, all its nasals except *N* (instead *Ṇ* is used twice) and all its fricatives except *S* and *H*. Neither Pāñini nor his commentators have given any clue to the following features of these notations:

(i) the dropping of *T*, *N*, *P*, *S* from the list of notational symbols;

(ii) the significance of the order of the notational symbols in each line;

(iii) the distinction between these group-markers and the other morpheme-classifiers, e.g. the morphophonemic function of accent shift and vowel-gradation applies to the suffix *aC* but not the *pratyāhāra* (group) *a-C*; in the oral tradition this marking has some explanation on

(a) the number of structural groups formed by these group-markers,

(b) the use of *Ṇ* at the end of two *Sūtras* (1 and 6),

(c) the inclusion of *h* in two *Sūtras* (5 and 14),

(d) the split between *jh*, *bh* and *gh*, *ḍh*, *dh* and *c ṭ t* and *k*, *p* in the *Sūtras* 8–9 and 11–12,

(e) the isolation of *l* in the *Sūtra* (5),

(f) the order of the nasals and voiced stops (palatal, labial, velar, retroflex, and dental) being different from that of the aspirated voiceless stops (velar, labial, palatal, retroflex, and dental) and also of the voiceless unaspirated stops (palatal, retroflex, dental, velar, and labial),

(g) the split between the two categories of fricatives *ś ṣ s* and *h*.

2.1.1. Before an attempt is made to find out the clues for the first three questions posed above, it might be useful to examine the traditional explanations on the above points (a-g), one by one. The technique of forming such a structural set with the help of these markers is: any set formed by a real and an unreal as its first and second members represents all the members (including the first) before the unreal, the intermediary unreal members automatically dropping out at the level of realization of utterance.[2] But though theoretically the number of sets thus formed will be $3 + 5 + 7 + 9 + 13 + 14 + 19 + 21 + 24 + 29 + 37 + 39 + 42 + 43 = 305$ in all, Pāṇini had use of only of those stated in Table I on p. 42. The total number of sets is thus 41; the numerals within brackets indicate the number of groups formed with the symbol of the column.

2.1.2. The notable features of this grouping are:

(1) no set is formed by the unreal symbol with the immediately preceding real symbol as the first member, simply because it is uneconomical as it has to represent a group and not an individual member;

(2) no set is formed with *ṛ*, *l*, *ñ*, *gh*, *k*, though they occur as the first member in the *Sūtras* 2, 6, 7, 9 and 12 respectively;

(3) *h* is grouped twice; because it shares all functions of the sets *a-Ŝ*, *a-M*, *a-Ṇ*$_2$ and *a-Ṭ* on the one hand and of the *jh-L and ś-L* on the other, its placement before *y* and after *h* is required for the purpose of excluding it from the *y-R*;[3]

(4) the functionally contrastive and mutually exclusive sets are:

[2] A.1.3.3 read with A.1.3.9.

[3] *Kā.* on pratyāhāra sūtra 5.

TABLE I

The pratyāhāra sets used in A.[4]

The first member real \ The second member unreal	(1) N_1	(3) K	(1) Ṅ	(4) C	(1) Ṭ	(3) N_2	(3) M	(1) Ñ	(9) Ṣ	(6) Ś	(1) V	(4) Y	(5) R	(6) L
a (8)	(1) a-N_1	(2) a-K		(3) a-C	(4) a-Ṭ	(5) a-N_2	(6) a-M			(7) a-Ś				(8) a-L
i (3)		(9) i-K		(10) i-C		(11) i-N_2								
u (1)		(12) u-K												
e (2)			(13) e-Ṅ	(14) e-C										
ai (1)				(15) ai-C										
h (2)										(16) h-Ś				(17) h-L
y (5)						(18) y-N_2	(19) y-M	(20) y-Ñ				(21) y-Y	(22) y-R	
v (2)										(23) v-Ś				(24) v-L
r (1)														(25) r-L
m (1)												(26) m-Y		
ṁ (1)							(27) ṁ-M							
jh (5)									(28) jh-Ṣ	(29) jh-Ś		(30) jh-Y	(31) jh-R	(32) jh-L
bh (1)									(33) bh-Ṣ					
j (1)										(34) j-Ś				
b (1)										(35) b-Ś				
kh (2)												(36) kh-Y	(37) kh-R	
ch (1)											(38) ch-V			
c (1)													(39) c-R	
ś (2)													(40) ś-R	(41) ś-L

[4] *Kā.* on *pratyāhāra.*

(i)				(ii)			
	a-K	vs	*e-C*		*h-Ś*	vs	*kh-R*
	a-C	vs	*h-L*		*y-M*	vs	*jh-L*
	a-M	vs	*jh-L*		*y-Y*	vs	*ś-L*
	a-Ś	vs	*kh-R*		*m-Y*	vs	*ś-L*
	e-Ṅ	vs	*ai-C*		*jh-Y*	vs	*ś-L*
					jh-Ś	vs	*kh-R*
					jh-Ś	vs	*kh-Y*
					jh-Ṣ	vs	*j-Ś*

(5) The following sets have distinct functions assigned to each, though each belongs to a larger inclusive st (← means: subset of):

i-K	←	*a-K*	*jh-Ś*	←	*h-Ś*	*kh-R*	←	*jh-R*
u-K	←	*a-K*	*bh-Ṣ*	←	*jh-Ṣ*	*c-R*	←	*kh-R*
i-C	←	*a-C*	*j-Ś*	←	*jh-Ś*	*ś-R*	←	*c-R*
e-C	←	*a-C*	*b-Ś*	←	*j-Ś*	*v-L*	←	*h-L*
ai-C	←	*e-C*	*v-Ś*	←	*h-Ś*	*r-L*	←	*h-L*
i-Ṇ$_2$	←	*a-Ṇ*$_2$	*m-Y*	←	*y-Y*	*jh-L*	←	*h-L*
y-Ṇ$_2$	←	*i-Ṇ*$_2$	*jh-Y*	←	*y-Y*	*ś-L*	←	*h-L*
y-M	←	*a-M*	*kh-Y*	←	*jh-Y*			
ṁ-M	←	*y-M*	*jh-R*	←	*y-R*			

(6) The following sets are unique:

a-Ṭ intends to exclude *l*;

y-Ñ intends to exclude 3 of the aspirate series (*gh ḍh dh*);

ch-V intends to exclude the velar and labial voiceless stops for some exclusive functional operations.

2.1.3. The functional load of each set is charted on pp. 44–57 below (the A. reference is given in Index 1A and the rule is explained in the particular section of description); the order is based on the order in the *Śiva Sūtras*, the inclusive sets are placed in descending order.

2.1.4. A close scrutiny of the chart will reveal the following facts:

(1) There is no group that has only one member, as that would defeat the purpose of the economy;

(2) The isolatory position of *l* not sharing the *ṇ* ~ *n* conditioning function with other members of the vowel semivowel set, though sharing the rest of the functions with it and the repetition of *h* sharing on one hand the functions of the vowel-semivowel group and on the other the functions of the noncontinuant consonants and the fricatives are unique;

(3) The usual traditional order of the consonants

k kh g gh ṅ

The Śiva Sūtra Chart

I	II			III	IV
	(i)	(ii)	(iii)		
The set and its composition	Function as a preceding environment	Conditioning as a following element	Factor for some operation as a determiner of some class, by being initial or final or a component	Functions as operated upon x = replacement, F = form	Inclusive of, or a sub-set of —
1. *a-L* comprising *a i u | ṛ ḷ |* *e o |* *ai au* *h y v r | l |* *ñ m* *ṅ ṇ n |* *jh bh* *gh ḍh dh* *j b* *g ḍ d* *kh ph* *ch ṭh th* *c ṭ t* *k p* *ś ṣ s* *(h)*			(*anekā-L*) (1) Polyphonemic ~ the whole F (2) non-*aL* operation its application (3) *aL* operation its application (All these 3 rules pertain to application of rules of replacement.) (4) The penultimate phoneme before the final *a-L* defined as *upadhā* (*ekāL*) (5) Monophonemic affix is called *apṛkta* (unmixed) (These two refer to rules of def.)	(1) x ~ final *a-L* (2) (x_1 x_2 x_3) Ṅ ~ final *a-L* (3) x ~ initial *a-L* if operation is on the following F	Inclusive of every set that follows, it stands for a phoneme
2. *a-Ś* comprising *a i u | ṛ ḷ* *e o* *y v r l* *ñ m* *ṅ ṇ n* *jh bh* *gh ḍh dh* *j b* *g ḍ d*		(i) *y* ~ *r* *bho* etc. or *-a-*			Subset of *a-L* and inclusive of sets 2–15, 17, 19–22, 24, 27, and 31–35. a voiced phoneme.

3. *a-M* *a i u | ṛ ḷ* . . . . . . *ñ m* *ṅ ṇ n*		(ii) Augment *rU kh-Y* and *ch-V* preceding this set, after *pum* and *-n* respectively.			Subset of 1–2 and inclusive of sets 4–15, 21–22, 27 a resonant
4. *a-Ṅ*$_2$ *a i u | ṛ ḷ* . . . . . . *h y v r | l |*			(i) Every member of this set stands for its homorganic phoneme (*savarṇa*) unless it belongs to an affix (definition).		(i) every non-supra-subset of long member before 1-3 & *pause* (*avasāna*) is inclusive of set 5-15, 22, optionally nasalized.
5. *a-Ṭ* comprising *a i u ṛ ḷ* . . . . . *h y v r |*	even (i) a intervening between *r, ṣ* and *n* causes *ṇ* ~ *n*	(i) *ch* ~ *ś* (ii) *ā̃* ~ *ā*[*rU*			Subset of 1–4 and inclusive of 6–15
6. *a-C* *a, i, u | ṛ ḷ |* *e o* *ai au*		(i) *y-N*$_2$ ~ *i-K* (ii) *ay* etc. ~ *e-C* (iii) *Guṇa* (Strong grade vowel) *a, a+ a-C* (iv) Long *a-K* ~ *a-K* + its homorganic *a-C* (v) supralong hiatused (*pragṛhya*) vowels and *ā* of (*āṄ*) are debarred from Sandhi.	(a) Definitions (i) not homorganic with *h-L* (ii) has 3 qualities (iii) has 3 accents (iv) has monotone (b) *aC* as measure of syllabic-component of a form, which by virtue of its being so monosyllabic (*ekā-C*). Indeclinable is *pragṛhya*. Verbal stem takes *CiṆ*. Segment of verbal stem takes reduplication (*dvitva*). Nonverbal stem has acute accent on the III-VII case endings. Stem if ends in *i-C* takes an augment *am* before a *K* class suffix. Stem if it is *bha* does not alternate before *iṣṭha, ima* and *iyas*.	(i) *z* = *a-C* if caused by a following environment	Subset of 1–5 and inclusive of 7–8, 10–15 (*a-C* = vowel)

I	II			III	IV
	(i)	(ii)	(iii)		
The set and its composition	Function as a preceding environment	Conditioning as a following element	Factor for some operation as a determiner of some class, by being initial or final or a component	Functions as operated upon x = replacement, F = form	Inclusive of, or a sub-set of —
		(vi) *sU* (of *saḥ* metrica causa) (vii) verbal stem *dīṄ* gets *yuṬ* augment before *a-C* (belonging to a suffix) (viii) *aṬ* augment before it (belonging to a verbal stem) in *LUṄ, LAṄ + LṚṄ* conjugations (ix) *iyaṄ* and *uvaṄ* ~ *i* or *u* of a verbal stem and of the non-verbal stem *strī* (x) *y-Ṇ*$_2$ ~ *l* (of the stem *īṆ*)	Verbal stem (in list) does not take *iṬ* augment if it is also marked with *grave* in the list. Verbal stem (reduplicated) does not take *iṬ* aug. Second member in a compound stem makes *ṇ* ~ *n* possible. (ii) a disyllabic (*dvyaC*) Stem (nonverbal) taking *yaT*. Stem (nonverbal) taking *'ṬH'aK*. Past participial (*niṣṭhā*) form (not having *ā*) gets acute accent on the first syllable. Stem preceded by *upa* is accented on the final syllable in *Tatpuruṣa*. Stem with *arma* as second member has accent on the first syllable. (iii) trisyllabic The same as above. (iv) a polysyllabic (*anekāC*) or (*bahvaC*) = (more than two syllables). Non-verbal stem not taking *ṄIṢ* (feminine suffix). Stem takes *'ṬH'aÑ*. Stem as the first member of a compound stem makes it take *'ṬH'aC*. Stem (denoting proper name of a person takes *'ṬH'aC*.		

(i) after *a-C* of a verbal stem there is no *iṬ* aug. before *thāL* (ii) *t* ~ *dā* after an *a-C* of a preverb (iii) *ṇ* ~ *n* (after *a-C* in a primary suffix) (iv) *y-R* doubled after *v*, *h* coming after *a-C*	(xi) *nUM* aug. after *radhI* and *jabhI* before it (belonging to a suffix) (xii) a stem ending in *i-K* gets *nUM* aug. before it (belonging to a declensional suffix) (xiii) *y* ~ last segment of *yuṣmad* and *asmad* before an *a-C* (of a declensional suffix) (xiv) *r* ~ *ṛ* before the same as in (xiii) (xv) *jaras* ~ *jarā* before the same (xvi) Ø ~ *a* of *Ksa* before an *a-C* (of a suffix) (xvii) No *Guṇa* stem vowel [an *a-C* (of a *P* class suffix) (xviii) *l* ~ *r* optionally of *gṝ* (xiv) *ṅUṬ* and *mUṬ* aug. after that vowel followed by *ṅ-M* before *a-C* (xx) *v* ~ *u* after *m-Y* optionally before *a-C*	Stem before *ja* makes it penultimate syllable accented. Stem ending in *ṄI* formed by *'GH'a* etc. has its final *ī* shortened. Stem before *matU* has its final vowel lengthened, unless it does not belong to the list *ajira*. Constituent ending in *i* or *ī* has *y* ~ *i*, *ī* (v) one having relatively lesser syllables (*alpāCtara*). If a member in copulative compound is placed first. (c) as determiner of position of some operation in a form, (i) M class affix after the final *a-C* (ii) *Ṭi* (the last segment) defined as comprising the final *a-C* and that which follows it, (iii) a member of a copulative compound having its final phoneme an *a-C* placed second, (iv) the first *a-C* in a form being lengthened defines the form to be *vṛddha* (lengthened) (v) the verbal stem beginning with *a-C* has the second segment reduplicated (vi) the declensional suffix beginning with it gets a grave accent (vii) the verbal stem classified by it in the list has acute accent on the first optionally (viii) the stem ending in it before a KH class suffix gets *mUM* augment (ix) before a second member beginning with it in a *Tatpuruṣa* compound *kat* ~ *ku*	(ii) Length ~ *a-C* (of *vadvraj*) (iii) Length ~ final *a-C* of a constituent before a *Ṅ* or *Ñ* class suffix (iv) Length ~ first *a-C* of a constituent before a secondary derivational suffix of *Ṅ*, *Ñ* or *K* class. Exceptions to this rule.

I	II			III	IV
	(i)	(ii)	(iii)		
The set and its composition	Function as a preceding environment	Conditioning as a following element	Factor for some operation as a determiner of some class, by being initial or final or a component	Functions as operated upon x = replacement, F = form	Inclusive of, or a sub-set of —
			(x) a neuter stem ending in it gets *nUM* augment before the Nom. + Acc. Plural (Sarvanā-masthāna) endings.		
7. *a-K* comprising *a i u r l*			(i) determiner of the class of verbal stems which do not have short-ending of the penultimate vowel before *Ṇi* and *CaṆ*	(i) long *a-K* ~ *a-K* + its homorganic *a-C*	Subset of 1–6 and inclusive of 8, 11–12
8. *a-*$Ṇ_1$ comprising *a i u*			(ii) *a-*$Ṇ_1$ followed by *r* ~ *ṛ*	(i) short *a-Ṇ* ~ long *a-Ṇ* before *Ka* suffix (ii) long *a-*$Ṇ_1$ ~ short *a-*$Ṇ_1$ before Ø ~ *ḍh* or *r* (iii) nasalized *a-*$Ṇ_1$ ~ *a-*$Ṇ_1$ before pause (if it is not supra-long) optionally.	subset of 1–7
9. *i-*$Ṇ_2$ comprising *i u ṛ ḷ e o ai au h y v r l*	(i) *s* ~ visarga (*ḥ*) before *kU* (if not initials of the next word, *pada*) (ii) *ṣ* ~ *s* after *i-*$Ṇ_2$				Subset of 1–4 and inclusive of 10–15, 22
10. *i-C* comprising *i, u, r, i e o ai au*	(i) *am* aug. after *i-C* (of a monosyllabic stem) before a *KH* class suffix	(i) long *a* does not *a* before *i-C*	(i) a heavy verbal stem beginning with *i-C* (except *rech*) takes *am* before *LIṬ* (ii) a verbal stem beginning with a consonant (*h-L*) and having *i-C* as its penultimate vowel makes *ṇ* ~ *n* (or primary suffix)		Subset of 1 to 6 and 9 inclusive of 11–15

11. *i-K* comprising *i u ṛ ḷ*	(i) *nUM* aug. after *i-K* before a declensional *a-C* beginning suffix		(iii) a verbal stem beginning with *i-C* and having a nasal element (*nUM*) does the same as (ii) (i) definition (i) *i-K* ~ *y-N*$_2$ as reduction (samprasā raṇa) (iii) *i-K* ~ *e-C* as substitution of the type, shortening (*hrasva*) (b) determiner of other causes (i) a verbal stem ending in *i-K* makes a suffix equivalent to K class (ii) a verbal stem having *i-K* as penultimate takes *-Ka* (iii) a non-verbal stem ending in *i-K* and preceded by a short vowel takes a secondary suffix *aṆ* (iv) a second member in *dvigu* compound ending in *i-K* does not have *accent-shift*	(i) guṇa + vṛddhi (strong + lengthened gradation) ~ *i-K* (ii) *y-N*$_2$ ~ *i-K* (iii) long *i-K* ~ short *i-K* before *vaha* excepting that of *pīlu* and before *kāśa* (iv) long *i-K* ~ short *i-K* (which is penultimate before *r, v*) of a verbal stem	Subset of 1-7 and 9–10 inclusive of 12
12. *u-K* comprising *u r ḷ*			(1) Classifier of suffixes which form a non-verbal stem taking *ṆīP* (feminine suffix) (2) classifier of a nonverbal stem class ending in it taking *yaT* (3) classifier of suffixes which form a non-verbal stem having short vowel ~ long final vowel before *gha* etc. (4) Classifier of non-verbal constituents for *nUM* aug. in a group of declensional suffixes		Subset of 1–7 and 9–12 inclusive of its own members only

I	II			III	IV
	(i)	(ii)	(iii)		
The set and its composition	Function as a preceding environment	Conditioning as a following element	Factor for some operation as a determiner of some class, by being initial or final or a component	Functions as operated upon x = replacement, F = form	Inclusive of, or a sub-set of —
13. *e-C* comprising *e o ai au*		(i) *Vṛddhi* (lengthened grade) *a, ā* + *e-C*	(i) a primary suffix ending in *e-C* forms and indeclinable (ii) a verbal stem ending in *e-C* has *ā* ~ *e-C* in list in other environments	(i) *i-K* ~ *e-C* in reduction (ii) *ay, av, āy* + *āv* ~ *e-C* and its exceptions (iii) *ā 3 i, ā 3 u* ~ supralong *e-C* in calling from distance	Subset of 1–7, 10 and inclusive of 14
14. *e-Ṅ* comprising *e, o*	(i) Ø ~ *h-L* after *e-Ṅ* as final of a non-verbal stem in vocative (ii) *e-Ṅ* + Ø ~ *e-Ṅ* + *a* (*T*)	(i) Ø + *e-Ṅ* ~ *a, ā* + *e-Ṅ*	(i) Guṇa (strong grade) = a (T), *e-Ṅ*		Subset of 1-7, 10, 13 and inclusive of its members only
15. *ai-C* comprising *ai, au*			definition (i) *vṛddhi* (lengthened grade) = *a*(*T*), *ai-C* (ii) *ai-C* ~ *a* in secondary suffix formation before *-y, -v* if the initial cluster with *-y, -v* (iii) supralong *ai-C* makes its component *i, u* supralong		Subset of 1–7, 10, 13 and inclusive of its own members only
16. *h-L* comprising *h y v r l ñ m ṅ ṇ n jh bh gh ḍh dh*	(i) *ŚānaC Śnā* after *h-L* before *hi* (ii) *h-L* before accented *y-Ṇ* a conditioning factor for an accent on the case ending	(i) Ø ~ *sU* (of *etat* + *tat* before *h-L* (ii) *-ī* ~ *-ā* before *h-L* beginning suffix ī-ā belonging to *Śnā* (iii) *ā* ~ *ai* (of *rai*) before *h-L*	(a) definition (i) unintercepted *h-L* called cluster (Saṁyoga) (ii) *a-C* + *h-L* cannot be homorganic (savarṇa) (iii) final *h-L* in description is a classifier symbol	(i) Ø ~ *h-L* after *h-L, Ṅī, āP* and long vowel if it is solitary and belongs to *sU, ti, Śi* and also after *e-Ṅ*	Subset of 1 and inclusive of 17–41

j b g ḍ d *kh ph* *ch ṭh th* *c ṭ t* *k p* *ś ṣ s* *(h)*	(iii) lengthening of the reduced vowel substitute for that which comes after *h-L* (iv) Ø ~ y (of secondary suffix) after *h-L* and before *ī* (v) after *h-L*-Ø ~ *y*-*M* [*y-M* optionally	declensional suffix weak (iv) *ana* ~ *ida* of) *idam* (v) Long *i-K* ~ *i-K* (penultimate) (vi) -Ø ~ -y (vii) *ṃ* ~ *m*	(b) determiner (i) a suffix with *jh-L* as initial belongs to *K* class if is preceded by a *h-L* coming after *i-K*, a suffix sa^N, *Ktvā* belong to *K* class after a verbal stem with *h-L* as initial (ii) a non-verbal stem ending in *h-L* takes *KyaṄ* (denominative suffix) (iii) a verbal stem with *h-L* as initial take *yaṄ* (iterative) (iv) a verbal stem ending in *h-L* takes *ṆyaT* (primary suffix) (v) a verbal stem beginning in *h-L* takes *yuC* (primary suffix) (vi) a heavy verbal stem ending in *h-L* takes *a* (primary suffix) (vii) a verbal stem with *h-L* as final takes *GHaÑ* (viii) a case ending with *h-L* as its initial phoneme (ix) a stem ending in *h-L* gets its VII case ending not realized as zero in compound (x) (*EkahaLmadhye*) stem having a between two solitary *h-L* s gets *e* ~ *a* before *LiṬ* (xi) a stem beginning with *h-L* has *r* ~ *r* if it is a light syllable before *iṣṭha*, *ima*, *īyas* suffixes (xii) a constituent ending in *h-L*

I	II			III	IV
	(i)	(ii)	(iii)		
The set and its composition	Function as a preceding environment	Conditioning as a following element	Factor for some operation as a determiner of some class, by being initial or final or a component	Functions as operated upon x = replacement, F = form	Inclusive of, or a sub-set of —
			gets its *a-C* lengthed before an active form with *siC* (xiii) a constituent with *h-L* as initial does not have *ā* ~ *a* (xiv) the verbal stem beginning with *h-L* makes *ṇ* ~ *n* after its *i-C*		
17. *h-Ś* comprising *h y v r l ñ m ṅ ṇ n jh bh gh ḍh dh j b g ḍ d*		*-u* ~ *vu*			a subset of 1, 7, 16 inclusive of 18, 20–22, 24, 26–27, 31–35; all the voiced consonants
18. *y-R* comprising *y v r l ñ m ṅ ṇ n jh bh ... j b ... kh ph ... k-p ... ś ṣ s*				doubling of *y-R* ~ *y-R*	a subset of 1, 16 and inclusive of 19–22, 26–27, 29–39, 41; all the consonants except *h*
19. *y-Y* comprising *y v r l ñ m ṅ ṇ n jh bh ... j b ... kh ph ... k p ...*		(i) homorganic nasal ~ *ṃ* (ii) the same operates optionally if *-ṃ* is word final			a subset of 1, 16, 18 and inclusive of 19–22, 26–27, 30–35, 37–38; all the consonants except the fricatives

20. *y-Ñ* comprising *y v r l ñ m ṅ ṇ n jh bh*		The constituent *-ā ~ -a* before *y-Ñ* initial suffix (of the *Sārvadhatuka* class or of declensional the class)			a subset of 1, 2, 16, 17, 18, 19 and inclusive of 21, 22, 27; semivowels, nasals and *jh, bh*
21. *y-M* comprising *y v r l ñ m ṅ ṇ n*		*Ø ~ y-M* before *y-M* and after *h-L*		*Ø ~ y-M* before *y-M* after *h-L*	a subset of 1, 2, 3, 16–20 inclusive of 22, 27, semivowels and nasals
22. *y-Ṇ₂* comprising *y v r l*	(i) after an accented *y-Ṇ₂* the weak accent declension		(i) *y-Ṇ₂ ~ i-K* before *a-C* (ii) *y-Ṇ₂ ~ i, ī, u, ū* finals of stems (iii) the segments of some stems beginning with *y-Ṇ₂* are realized as zero before comparative suffixes (iv) a verbal stem with a cluster as initial and having *y-Ṇ₂* takes *n ~ t* (past participle)	(i) *i-Ṇ₂ y-Ṇ₂* (as reduction)	a subset of 1, 2, 3, 4, 5, 16–21 and inclusive of its own members, semivowels
23. *v-L* comprising *v r l ñ .... m jh .... dh j .... d kh .... k p ś ṣ s h*		*Ø y v* before *v-L*	(i) the *v-L* initial ārdhadhatuka suffix gets *iṬ* augment before it		a subset of 1, 16, inclusive of 24, 25, 26, 27, 28–41; all the consonants except *y*
24. *v-Ś* comprising *v r l ñ ... m jh ... dh j ... d*			(i) the *v-Ś* initial primary suffix does not permit *iṬ* augment before it		a subset of 1, 2, 16–19 and 23 inclusive of 27, 31–35; all the voiced consonants except *h, y*

I	II			III	IV
	(i)	(ii)	(iii)		
The set and its composition	Function as a preceding environment	Conditioning as a following element	Factor for some operation as a determiner of some class, by being initial or final or a component	Functions as operated upon x = replacement, F = form	Inclusive of, or a sub-set of —
25. *r-L* comprising *r l ñ- ... m jh ... dh j ... d kh ... k ... ś ṣ s h*			(1) a verbal stem ending in *r-L* brings free variation of Guṇa gradation of stem vowel		a subset of 1, 16, 23, and inclusive of 26, 27–41; all the consonants except *y, v*
26. *m-Y* comprising *m ṁ ṇ n jh ... dh j ... d kh ... t k p*	*v* ~ *uN* before *a-C*				a subset of 1, 16, 18, 19, 23–25 and inclusive of 27, 30–35, 37–38; all the consonants of the 5 series except n
27. *ṁ-M* comprising *ṁ ṇ n*	*ṁ-MUṬ* augment after *ṁ-M* preceded by a short vowel and before *a-C* i.e., *-ṁṁ* ~ *-ṁ* *-ṇṇ* ~ *-ṇ* *-nn* ~ *-n* in external sandhi		*ṁ-MUT* suffix having *ṁ ṇ n* followed by *ṁ* as augment.		a subset of 1, 2, 3, 16, 17, 18–21, 23–26 and inclusive its own members all the nasals except n (palatal)
28. *jh-L* comprising *jh ... dh*	after *jh-L* (1) Ø ~ *s*	before *jh-L* (i) Ø ~ *s* (ii) Ø ~ *s, k*	*jh-L* as classifier (i) of verbal suffix for classification under *K* class	*jh-L* as replaced by (i) *j-ś* ~ *jh-L* in final pause (ii) *j-ś* ~ *jh-L* before *jh-ś*	a subset of 1, 16, 23, 25 and inclusive of 29–

j ... d *kh ... t* *k p* *ś ṣ s h*		(iii) *kU ~ cU* (iv) *ḍh, dh, gh, th ~ h,* (v) *bh-Ṣ ~ b-Ś* (vi) *ṃ ~ n, m*	(ii) of verbal suffix of non K class for *aM* augment (iii) of declensional suffix for accent shift (iv) of verbal suffix for *nUM* augment after *masji* and *naśi* (v) of declensional suffix after *a* stem for *eT ~ a* (vi) of declensional suffix for accent shift after *ṣaṭ* and *tri* (vii) of declensional suffix for long vowel ~ short vowel (viii) of a verbal stem class for *-dhi ~ -hi* (Imperative suffix) (ix) of verbal suffix for *āØ ~ an* of stem	(iii) *c-R ~ jh-L* in reduplication or before *kh-R* or before pause	32, 33–41; all the noncontinuants
29. *jh-R* comprising *jh ... dh* *j ... d* *kh ... t* *k ś ṣ s*		*Ø ~* the homorganic *jh-R* before *jh-R*		*Ø ~* the homorganic *jh-R* after *h-L* and before *jh-R*	subset of 1, 16, 18, 23, 25 and 28, inclusive of 30–39, 41; all the non-continuents except *h*
30. *jh-Y* comprising *jh ... dh* *j ... d* *kh ... ch* *c ṭ t k p*	(i) *v ~ m* (of *mat U*) after *jh-Y* (ii) homorganic stop ~ *h* (iii) *ch ~ ś*		(i) an adverbial compound (avyayībhāva) ending in *jh-Y* gets *ṬaC* secondary suffix optionally		subset of 1, 16, 18, 19, 23, 25, 27–29 and inclusive of 31, 32, 33, 34, 35, 37, 38; all the stops
31. *jh-Ś* comprising *jh ... dh* *j ... d*		*j-Ś ~ jh-L* before *jh-Ś*			subset of 1, 2, 16, 17, 18–19, 23–26, 28–30, inclusive of 32–35; all voiced stops

I	II			III	IV
	(i)	(ii)	(iii)		
The set and its composition	Function as a preceding environment	Conditioning as a following element	Factor for some operation as a determiner of some class, by being initial or final or a component	Functions as operated upon x = replacement, F = form	Inclusive of, or a sub-set of —
32. *jh-Ṣ* comprising *jh, bh, gh ḍh, dh*	(i) after *jh-Ṣ dh* ~ *t, th* except in the case of *dhā*		(i) a monosyllabic verbal stem having *jh-Ṣ* as final has its initial *b-Ś* replaced by *bh-Ṣ*		subset of 1, 2, 16, 17–19, 23–26, 28–31 inclusive of 33; all aspirated voiced stops
33. *bh-Ṣ* comprising *bh gh dh dh*			(i) classifier of substitution *bh-Ṣ* ~ *b-Ś* as explained above		subset of 1, 2, 16–19, 23–26, 28–32; all the voiced aspirated stops except *jh*
34. *j-Ś* comprising *j b g ḍ d*			(i) a classifier of operation, where x is not = X (ii) a classifier of substitute *j-Ś* ~ *jh-L* before *jh-Ś*		a subset of 1, 2, 16–19, 23–26, 28–32; all voiced unaspirated stops
35. *b-Ś* comprising *b g ḍ d*				*bh-Ṣ* ~ *b-Ś* as explained in column II (iii) of *jh-Ś*	a subset of 1–2, 16–19, 23–26, 28–32, 34; all voiced unaspirated stops except palatal
36. *kh-R* comprising *kh ph ch ṭh th c ṭ t k p ś ṣ s*		(i) (visarga) *-ḥ* ~ *-r* before *kh-R* (ii) *-s*~*ḥ* before *kh-R* (iii) *c-R* ~ *jh-L* before *kh-R*			subset of 1, 16, 18–19, 23, 25, 28, 29 inclusive of 37–39, 41; all the voiceless consonants

37. *kh-Y* comprising *kh ph ch ṭ h th c ṭṭ k p*		*rU* ~ *m* (of *pum*) before *kh-Y*	(i) classifier of the segment of a reduplication preceding *ś-R*, which is not replaced by zero		subset of 1, 16, 18–20, 23–26, 28–30, 36 inclusive of 38; all the voiceless stops
38. *ch-V* comprising *ch ṭh th c ṭ t*		*rU* ~ *m* (final)			subset of 1, 16, 18–20, 23–26, 28–30, 36–37, inclusive of its own members; all the voiceless stops except labial & velar
39. *c-R* comprises *c ṭ t k p ś ṣ s*			(i) classifier of the operation with *c-R* (ii) classifier of substitution *c-R* ~ *jh-L* in reduplication and before *kh-R* and pause		subset of 1, 16, 18, 23, 25, 28–29, 36 and inclusive of 41; all the unaspirated voiceless stops and voiceless fricatives
40. *ś-L* comprising *ś s s*			(i) classifier of verbal stem ending in *ś-L* which also has *i-K* penultimate and takes *Ksa* ~ *siC* in *LUṄ*		subset of 1, 16, 23, 25, 28, and inclusive of 41; all the fricatives
41. *ś-R* comprising *ś ṣ s*		(i) *ḥ* ~ *ḥ* before *kh-R* followed by *ś-R* (ii) *ḥ* ~ *ḥ* before *ś-R* (iii) the same as column II (ii) of *kh-Y*		(i) no doubling of *ś-R* before *a-C*	subset of 1, 16, 18, 23, 25, 28–29, 36, 39–40 and inclusive of its own members; all the voiceless fricatives

c ch j jh ñ
ṭ ṭh ḍ ḍh ṇ
t th d dh n
p ph b bh m

y r l v ś ṣ s h

is disturbed purposely for the following reasons:

(a) *h* has to be placed before and after *y-R*; simply because its morphophonemic behaviour is different from this group in the respect of gemination, though it shares functions of the inclusive bigger sets of *y-R* the first *h* includes the *visarga* (the final) and the initial allophones, while the second only the medial one, variable with the stops (non-labial);

(b) semivowels are placed together in an order which is paralleled by the order of *i u ṛ ḷ*, with which they morphophonemically alternate (the cross-section between *y v r* and *l* has already been explained above); also *v* has been excluded from the functions of the *r-L* group, *r* to be included in the functional group *v-L*;

(c) the nasals have been placed at the head of the other consonants of the series, as they behave as continuants; the order *ñ m ṅ ṇ n* is intended to exclude *ñ* from *m-Y*, and *m* from *ṅ-M*;

(d) the voiced consonants are placed before the voiceless ones, in order to make contrastive groups of voiced vs. voiceless phonemes, voiced vs. voiceless consonants, and voiced vd. voiceless stops; the order is similar to that of the nasals, i.e. *jh bh / gh ḍh dh*, for similar reasons; *jh, bh* go with the semivowels for $\bar{a} \sim s$ alternation, so they have to be placed before others, and *jh* has to be excluded from the group because there is no *jh* ~ *j* alternation corresponding to *bh-Ṣ* ~ *b-Ś* alternation; so that it also explains the disturbed order of the voiced unaspirated stop set;

(e) the voiceless series have been arranged in a different way, though the aspirated stops precede the unaspirated ones like the sets referred to in (d) above, simply because the velar and labial series are to be excluded from the functional set *ch-V*; there is no notation boundary between the aspirated and the unaspirated, because there is no distinct function which can be assigned to the aspirated group as a set or as a subset, different from the functions of the unaspirated group, while there is a dividing line between *c ṭ t* / and *k p* because *c ṭ t* have to go with the *ch ṭh th*. Otherwise, the order is in accordance with the tradition;

(4) the arrangement is purely structural and serves not only for the phonemic functions, but also for the morphophonemic and morphemic functions, in as much as every set and every member of each set stands for (a) itself, (b) the morpheme having it as the initial or final segment, (c) the component made out of it and in the case of the set *a-*$\dot{N}_2$, as well as for (d) the group of homorganic phonemes varying in point of accent, quantity or nasalization;

So, though $\dot{N}$ as a notational symbol has been used twice, there is no ambiguity for a person who can grasp the context fully well (here we have used $\dot{N}_1$ and $\dot{N}_2$ for the

sake of convenience). The notational symbols (denoting the members of these sets) are outside the set.

(5) Neither an aspirated stop, nor a voiced stop, nor a vowel, nor a semivowel, nor a dental nasal, nor *h*, has been used as a classifier for the purpose of this grouping, which is in consonance with the structure of the language to the extent that

(a) the final *h* is realized as *ḍh*, *dh*, or *gh* (VIII.2.31–35),

(b) the final *n* (of a stem) is realized as zero (VIII.2.7),

(c) the final aspirated stop is realized as either the unaspirated voiced or voiceless stop (VIII.4.56). The unaspirated voiceless type, if used as the final before pause, would create confusion.

2.1.5. Now coming to the problem of dropping of *T, N and P* from the list of symbols in the Śiva Sūtras, the explanation for each of them is implicit in Pāṇini.

(i) *T* has been used as a classifier not for group but the particular vowel quantity, so that *a* in itself may stand for three quantitative distinct phonemes, but *a T* stands for *a* alone, *ā T* for *ā* and *ā 3 T* for *ā 3* only (I.1.70).

(ii) a group with *N* cannot be used in the nominative case in the description for the reason stated above.

(iii) *P* and *S* have been left out, simply to indicate a break as will be shown below, The order of the symbols is:

	I Row							*II Row*									
(1)	*a*	*i*	*u*	$\dot{N}_1$				(8)	*jh*	*bh*	$\tilde{N}$						
(2)	*ṛ*	*ḷ*		*K*				(9)	*gh*	*ḍh*	*dh*	*Ṣ*					
(3)		*e*	*o*	*Ṅ*				(10)	*j*	*b*	*g*	*ḍ*	*d*	*Ś*			
(4)		*ai*	*au*	*C*				(11)	*kh*	*ph*	*ch*	*ṭh*	*th*	*c*	*ṭ*	*t*	*V*
(5)	*h*	*y*	*v*	*r*	*Ṭ*			(12)	*k*	*p*				*Y*			
(6)			*l*	$\dot{N}_2$				(13)	*ś*	*ṣ*	*s*			*R*			
(7)	*ñ*	*m*	*ṅ*	*ṇ*	*n*	*M*		(14)		*h*				*L*			

These two groups of seven *Sūtras* each begin with $\dot{N}$ and $\tilde{N}$, perhaps they are to be used for the phenomena of *vṛddhi* (lengthening) (VII.2.115), which itself is an auspicious suggestion. There is a break after the $\dot{N}_2$, as the groups following it do not mark members that can have further distinct submembers. The notational symbols used in (2) to (7) *Sūtras* follow the order of the alphabet. The notational symbols used in the second row after (8), are to be taken in pair, (9) + (10), (11) + (12) and (13) + (14). The occurrence of *Ṣ* before *Ś* indicates the reversal of the order of the alphabet, and so the occurrence of *V* before *Y*, the aspirated series also following the unaspirated ones in the alphabet. The dropping of *S* is accountable for two reasons; firstly it could pair with *H* and *H* could not be used in the final positions, and secondly it marks a clear break between voiced and voiceless. The explanation given above cannot be contended to be entirely free from speculation, and as such cannot be offered as a conclusive logical explanation.

As to the necessity of a clear-cut distinction between a group marker and a classifier notation, the present study was deviated from Pāṇini to the extent that a hyphen has been used to mark the group classifier. It was not considered relevant by Pāṇini, simply because his grammar was essentially meant for memorization and the distinction was to be inferred from the context.

2.1.6. The arrangement of *Śiva Sūtras* is thus more in consonance with the structural framework of the whole grammar than with phonetic criteria, and as such the defence put forth by Thieme, "The arrangement of Pāṇini's list of sounds is explainable as due to the phonetic catalogue of sounds having been adopted to the practical requirements of the grammar, in which Pāṇini wanted to refer to certain groups of sounds by short expressions,"[5] needs a modification. It is not a *phonetic catalogue*; the grouping of *h* with *y v r l* on one hand and with *ś ṣ s* on the other is based not so much on phonetic qualities of *h* as on its peculiar behaviour as initial and final on one hand, and medial on the other. The grouping of *jh*, *bh* with *y v r l ñ m ṅ ṇ n* is still more puzzling, because it is relevant only for a stem vowel alteration (short *a* replaced by long *ā*) before a suffix beginning with *v*, etc. It is worth noticing that not every *bh-Ṣ* could be a conditioning feature, but only those that begin a declensional suffix. So that merely a phonetic quality of *bh* is not pertinent. The general methodological principle of Pāṇini as aptly observed by Staal is of course, "this group of sounds [a term which I would not prefer to use for reasons to be explained later] should contain only sounds occurring in the sequence denoted by the *pratyāhāra*, but it need not contain all the sounds of the sequence. (Further) each linguistic rule should be given in shortest possible form, whereas the member of metalinguistic symbols should be reduced as far as possible."[6] For example, the groups of sounds *y v m bh* intended to be covered by the group *y-Ñ* (others not occurring as real initials of the particular classes of suffixes) could be as well covered by two groups, but for economy and neatness of description the arrangement of Pāṇini provides for such a possible group, even at the cost of the traditional order.

2.1.7. Before we conclude our analysis of the *Śiva Sūtras*, the following features of the sets formed by them must be recapitulated:

(1) They are sets of real members and as such do not account for the unreal aspects of these real members, e.g. *jh* of *jh-L* does not include '*JH*' of '*JH*'*i* where '*JH*' is unreal as *jh*, and is a cover symbol for *ant-* or *at-* (VII.1.3–8).

(2) They are grouped on the basis of their total structural behaviour in the language and not on mere phonological similarity.

(3) They follow the order of the traditional alphabet (varṇasamāmnāya) as long as the order is not interfered by the overall structural behaviour.

[5] Paul Thieme, *Pāṇini on the Veda*, p. 6.

[6] J. F. Staal, "A Method of Linguistic discription – The order of consonants according to Pāṇini", *Language*, Vol. 38, pp. 1-10.

(4) They are formed on the basis of strict economy so that the order may take care of the inclusiveness of a bigger set and also of the exclusiveness of one or more members.

(5) The order of the notational symbols can not be explained in conclusive terms.

2.2. OTHER TYPES OF GROUPS BESIDES THE ŚIVA SŪTRA GROUPS

2.2.0. A group in Pāṇini is signalled in 4 ways:

(a) the final segment of the group, together with the first member of the group, may represent the entire group, or the final segment itself be a group-marker of a class of which the segment preceding is the first member, or one of the segments (initial, medial or final) may be a notational symbol for operations and sometimes distribution shared by all the members of the class (in all these cases the segment is merely a notational symbol *it* realizable by zero at phonemic level);

(b) the first member of a group followed by a word like "etc." (ādi); this grouping is based on lists of verbal roots *(dhātupāṭha)* or non-verbal stems *(gaṇapāṭha)*. In both the cases this is a list type of grouping *(gaṇa)*;

(c) the group may be designated by a definite term applying to all the members, but belonging to none individually *(sañjñā)*;

(d) the group may be signalled by the highest common factor shared by all the members.

2.2.1. Under the (a) type group come

(i) the Śiva Sūtra *Pratyāhāra* (groups determined by notational symbols, the name *pratyāhāra* is given by Pāṇini's commentators), already explained,

(ii) the following groups of suffixes formed by a similar device as applied in Śiva Sūtras:

(1) *sU-P* =	*sU*	*au*	*Jas*	(Nom.)	
	am	*auṬ*	*Śas*	(Acc.)	
	Ṭā	*bhyām*	*bhis*	(Intr.)	
	Ṅe	*bhyām*	*bhyas*	(Dat.)	
	Ṅas	*bhyām*	*bhyas*	(Abl.)	
	Ṅas	*os*	*ām*	(Gen.)	
	Ṅi	*os*	*suP*	(Loc.)	

(all the declensional endings).

(2) *sU-Ṭ* = the first five endings (nom. singular, dual and plural acc. sing. and dual),

	Persons	.Sing.	Dual	Plural	
(3) *ti-Ṅ* =	III	*tiP*	*tas*	*'JH'i*	active
	II	*siP*	*thas*	*tha*	
	I	*miP*	*vas*	*mas*	

III	*ta*	*ātām*	*'JH' a*	active and middle
II	*thās*	*āthām*	*dhvam*	
I	*iṬ*	*vahi*	*mahi Ṅ*	

= all the conjugational endings

(4) *ta-Ṅ* = all the middle endings.

The functional load of each of them is given in Index I B (see p. 141);

(iii) the five groups of consonants classified according to place of articulation, viz.

the velar *kU*
the palatal *cU*
the retroflex *ṭU*
the dental *tU*
the labial *pU*

signalled by *U*; the functional load of each of is explained in the Index 1 C (see p. 143).

These three groups are technically called *pratyāhāra* by the commentators, though Pāṇini did not define the term as such, as he preferred to use the abstract notational designation, in consonance with his idea of perfect precision as indicated earlier, each of the group *a-Ṇ*$_2$ *(a i u ṛ ḷ e o h y v r l)* represent more than one member, homorganic but contrastive in quality, quantity or nasalization. So, wherever he wants to specify the particular quantity, he uses another symbol, *T*, after the particular length-marked vowel, so that we have the following additional chart of groups marked by only one member.

2.2.2. Groups

Group	Represents in notational symbols	Realizable as	Reference
1. *a*	*aT āT ā3T*	*a*, *ā* or *ā3*	nom. (*ah*) VIII.4.68 (closed) abl. (*āt*) as preceding condition in VI.1.87 * 88–92 * 94–96 VI.1.104 (sandhi) gen. (*aḥ*) (open *a* is replaced by closed *ā*) VIII.4.68
2. *i*	*iT īT i3T*	*i*, *ī* or *ī3*	(abl.) (*eḥ* = ending in *i* or *ī*) (as preceding condition for suffixation) III.3.56 VIII.2.15 (chand.) (gen.) (*eḥ*) (replacable by) III.4.86 (*u*) VI.4.77 (*iya Ṅ*) * VI.4.78-80 VI.4.82 (*y-Ṇ*$_2$) VI.4.148 (zero) *-upadhāt* (after a-root having *i* or *ī* as penultimate) I.2.26

Group	Represents in notational symbols	Realizable as	Reference
3. *u*	*uT ūT ū3T*	*u*, *ū* or *ū3*	nom. (*uḥ*) VIII.2.80 (as replacement for *das* of *adas*) abl. (*oḥ*) (after *u* or *ū* final root or stem) III.1.125 (*-ṆyaT*) III.3.57 (*-aP*) IV.2.71 (*-aÑ*) IV.2.119 (*-'ṬH'aÑ*) * IV.2.120 IV.3.139 (*-aṆ*) V.1.2 (*-yaT*) gen. (*oḥ*) (to be replaced by) VI.4.77 (*uvaÑ*) VI.4.83 (*v*) VI.4.146 (*guṇa* before second deriv. suffix) VII.4.80 (*-i* in reduplication before *pU*) * VII.4.81 *-upadhāt* (after a root having *ū* or *u* as penultimate) I.2.26
4. *r*	*ṛT ṝT*	*ṛ* or *ṝ*	(nom.) does not appear (abl.) (*uḥ*) (after a root or stem ending in *ṛ* or *ṝ*) I.2.12 (a *jh-L* initial suffix behaves like a K-class) (comp.) III.1.124 (*ṆyaT*) III.2.171 (*Ki*, *Kin*) chand. (Gen.) (*uḥ*) (is replaced by) I.1.51 (*a-Ṇ₂ + r*) VII.4.7 (*r* or *ir* or *ār* in aorist reduplication) * VII.4.8 (chand.) VII.4.16 (*guṇa*) VII.4.66 (*aT* in perfect reduplication)
5. *ḷ*	*ḷT, ḹT*	*ḷ* or *ḹ*	does not appear in A.
6. *e*	*eT e3T*	*e e3*	(nom.) (*e*) not distinct from *eT* in III.4.79, VI.4.67 (as replacement)
7. *ai*	*aiT ai3T*	*ai ai3*	(nom.) (*ai*) not distinct from *aiT* as replacement in III.4.93 III.4.95-96 IV.1.36
8. *o*	*oT o3T*	*o o3*	(nom.) (*o*) not distinct from *oT* as replacement in IV.4.108
9. *au*	*auT au3T*	*au au3*	(nom.) (*au*) not distinct from *auT* as replacement in IV.1.38, VII.1.34, VII.2.107

2.2.3. It must be pointed out, however, that every occurrence of *e o ai au* is intended only for the long mora which these symbols already represent, and not for the supralong one which replaces the former in sentence morphophonemics as regards other vowel group symbols. In A.III.4.86 *or uḥ* (*-u T* ~ *i* of *tiP* and a *'JH'* in *LOṬ*) only the short *i* and *u* are intended, and so the only justification for the use of group symbol in place of the individual could be either economy (*er uḥ* instead of *ita ut* brings an economy

of one syllable) or avoidance of confusion (in oral transmission *iT* is the same as *it*, notational symbol, so instead of *u* ~ *i*, there would have been *u* ~ *i* of *tiP*), but nevertheless the occurrence of *u* instead of *uT* is unexplained, unless we presume that the *T* has dropped out in oral transmission, so that instead of "*erut / ser hyapi ca*" (III.4.86 and III.4.87 read together) we have "*erus / ser hyapi ca*" split up by the first recorders as "*eruh / ser ...*".

This presumption will help in the foregoing cases of *e*, *o*, *ai*, *au* as well, and so we might be justified in reconstructing the following *sūtras* as follows:

(1) III.4.79
Ṭita ātmanepadānām ṭer e / thāsaḥ se as ... *ṭer et / thāsaḥ* ...
III.4.80

(2) III.4.93
eta ai / leṭo ḍāṭau as *eta ail / leṭo ' dāṭau*
III.4.94

(3) III.4.95
āta ai / vaito ' nyatra as *āta aid vaito ' etc*
III.4.96

(4) IV.I.36
pūtakrator ai ca as '*pūta ... aicca*'

(5) IV.I.38
manor au vā as *manor aud vā*

(6) IV.4.108
samanodare ... o codāttaḥ as ... *occodāttaḥ*

(7) VI.4.67
erliṅi as *el liṅi*

(8) VII.1.34
āta au ṇalaḥ as *ataauṇ ṇalaḥ*

(9) VII.2.107
adasa au sulopaśca as *adasa aut sulopaśca*

If we examine these instances closely, we find a clue to this deviation from what we might say the correct form; the disappearance of *t* in all these cases is either due to a laxity in gemination of *t* with *th* or with *c*, *l*, *n* after having been assimilated as *c*, *l*, *n* respectively, according to sandhi rules, or a weak pronunciation of *d* before *v* and *t* before *s*, or a lack of distinction between *r* and *l*. All these factors are well attested in the phonemic patterns of the Middle Indic dialects. Another clue is the occurrence of the nom. sing. form *eḥ* written as *er* in VI.4.67 as against *e*, *o*, *ai*, *au* without a visarga following it in all the other cases. It could either have been *e liṅi* or *elliṅi*.

2.2.4. Groups *signalled by classifiers* and designated by the *-it* class are intended to give an item-and-arrangement statement of the components of an element, so that every notational symbol, *it*, stands for a set of functions in one class and sometimes for a set of others in another, e.g., a *K* notation has two sets of contrastive functions,

K of the primary derivational suffix stands for the strengthening or lengthening of the vowel of the constituent preceding it, while the same *K* of the secondary derivational suffix stands for the lengthening of the first syllable vowel of the constituent preceding it. A combination of more than one notational symbol is intended to subclass a particular class on the basis of its additional function, e.g., *ṬU vèp Ṛ* is a verbal base belonging to the grave accented class (i.e., a middle ending class distributionally by A.I.1.12), a subclass *Ṛ* (i.e., which does not have short vowel replacing its long penultimate vowel in causative aorist by A.VII.4.2), and a further sub-subclass *ṬU* (i.e., a class which has *athuC* as primary suffix distributionally by A.III.3.89). Yet these symbols cannot be equated with the unit *morphophoneme* of the item-and-arrangement system, as they are in themselves not representable by a phonemic appearance at the phonemic stratum, and they also stand for the morphemic distribution of the class denoted by them.[7] Thus it appears that, though each of these notations has a distinct set of functions, the functions are not limited to one stratum and they themselves have no other real shape except zero. In a way the setting up of these symbols is an achievement of Pāṇini, a real synthesis of the item-and-process and item-and-arrangement methods. This point will be further discussed in the following chapter, so we proceed further with the functions of these classifiers. The chart below gives a list of the classifiers and the classes marked by them:

Notational Symbols	Classes Marked	Function
1. Accents on the notational vowel		
(a) Acute (b) Grave (c) Circumflex	*BV* only	morphemic distribution
2. Nasalized Vowels as final only		
-Ā	BV only	suffix allomorphy
-Ā	BV only	—
-I	BV	stem allomorphy
-IR	BV only	suffix allomorphy
-I	BV only	—

[7] S. M. Lamb, "On the mechanization of syntactic analysis" (paper under publication): "For most spoken languages, there are at least four structural strata. We may call these the *phonemic*, the *morphophonemic*, the *morphemic* and *sememic*. In addition, there is another stratum, the *phonetic*, which lies adjecent to the phonemic structure, the phonetic stratrum belongs to the "real world" and consists of sounds while every thing in the linguistic structure is abstract in nature and neither continous nor consists of sounds". – Also Charles F. Hockett, "Two Grammatical Models", *Readings in Linguistics*, p. 386: "As between IP and IA, the former is older. The key term in IP is process, as is evident from the following characterization by Harris (1944, p. 199): 'The difference between two partially similar forms is frequently described ... as a process which yields one form out of the other. Thus when bases or theme have several vocablic forms, the various forms are said to be the result of vowel-charge processes operating upon the base or theme. The difference between a base and a base-plus-suffix is described as a result of the process of suffixation. This is a traditional manner of speaking, especially in American Indian grammar. It has, of course, nothing to do with historical change or process through time; it is merely process through the configuration, moving from one to another or larger part of the pattern'."

Notational Symbols	Classes Marked	Function
-U	BV	—
-Ū	BV only	—
-Ṛ	BV	stem allomorphy
-Ḷ	BV only	suffix allomorphy
-O	BV only	stem allomorphy
-I	SBVD	not explicit in Pāṇini
	SBVI	
	SBD	
	SBI	
-U, -Ṛ	SBD	1) morphemic distribution
	SBVD	2) allomorphy of the stem formed by it
-Ū	*augments*	not explicit in Pāṇini
3. Consonants initial or final		
K-	SBVD	stem allomorphy suffix allomorphy
-K	SBVD	
	SBD	
	augments	
KH-	SBVD	position of the aug. stem allomorphy (in terms of augmentation)
GH-	SBVD	stem allomorphy
-Ṅ	B	function not explicit in Pāṇini
	BV	morphemic distribution suffix allomorphy and group-boundary
	SBVI	suffix allomorphy and group-boundary
	SBD	stem allomorphy
	SBVD	
	aug. or substitute	function not explicit in Pāṇini
Ṅ-	SBI	stem allomorphy
	SBD	common denominator
	SBVD	stem allomorphy
C- and *-C* both	SBVI	stem allomorphy
	SBVD	
	SBD	
-C only	B	morphemic distribution
J-	SBI	function not explicit in Pāṇini
	SBVI (substitute)	
Ñ- and *-Ñ*	SBD	morphemic distribution, stem and suffix allomorphy
	SBVD	stem allomorphy
-Ñ	BV	morphemic distribution
ÑI-	BV	sememic
Ṭ- and *-Ṭ* both	SBVD	morphemic distribution
	SD	
-Ṭ only	SBVI	suffix allomorphy
	B	morphemic distribution
	aug. or substitute	position of the augment
ṬU	BV only	morphemic distribution
Ḍ-	SBD	stem allomorphy
	SBVD	

Notational Symbols	Classes Marked	Function
ḌU-	BV only	morphemic distribution
Ṉ- and *-Ṉ* both	SBVD	stem allomorphy
	SBD	
Ṉ- only	substitute	function not explicit in Pāṇini
-Ṉ only	BV	—
-T only	SBD	suffix accent
	SBVD	
-N only	SBD	stem allomorphy
	SBVD	—
-P only	general	suffix accent
	SBVI	stem allomorphy
	SBVD	—
	SBD	—
-M only	aug.	position of the aug.
-R only	SBVD	stem allomorphy
	SBD	—
L- and *-L* both	SBVD	stem allomorphy
-L only	SBD	
S-	SBVI	stem allomorphy or morphemic distribution
	SBVD	
	SBI	

The members of the suffix class have been alphabetically indexed in Index 2B (see p. 148). The functional load of each class and subclass has been given in Index 2C (see p. 169). In short, the function is fivefold:

(1) marking the class as a distributional class[8] in terms of morpheme or morphemes representing a limited syntactic relationship,

(2) marking the class formed by the class as final as a distributional class for another morpheme,

(3) accounting for the morphophonemic alternation (in terms of accent, vowel gradation or augmentation or substitution) of the stem preceding it or the suffix following it,

(4) accounting for the morphophonemic alternation of the class formed by the class as final or of the distribution class of that formed class,

(5) position of the class (before, after or intervening).

2.2.5. Some of the notational symbols are reserved for a different type of grouping. Such symbols are '*KH GH CH JH ṬH ḌH PH YU VI VU*' respectively ~ *īn*, *-iy*, *-īy*, *ant* ~ *at*, *ik*, *ey* and *āyan*. They have been used to serve these two purposes:

(1) to effect an economy,

[8] *"The syntax may be completely described by a list of distribution classes of items, with the membership of each, and a list of constructions.* A construction is characterized by specification of (1) the distribution classes which enter into it and their relative orders (2) the distribution class membership of the constitutes Lists of distribution classes of composite forms need not be given in the description (even though they exist), since they are defined by the constructions" (S. Lamb, "On the Mechanization of Syntactic Analysis").

(2) to group the class of distinct members by means of a common denominator (of a common phonemic sequence) giving it an abstract name.

'*KH, GH, CH, ṬH, ḌH, PH*' belong to the secondary derivational suffix class only and are initial except '*ṬH*' which is also preceded by *Ṭi* and *Ṣ* and except '*PH*' which is also preceded by *C* and *Ṣ*. '*JH*' belongs to the conjugation class only and is only initial. '*YU, VI* and *VU*' belong to the derivational suffix classes, both primary and secondary. Besides, *L* and *LU* have been used to signify the conjugational ending, and the three types of zero respectively. *L* serves as a symbol for conjugational ending and is subclassified into two groups, *Ṭ* and *Ṅ*, on the basis of the allomorphy of the conjugational suffixes. It is again subgrouped on the basis of the sememic concept into ten subgroups marked by the intervening vowels, viz.

LAṄ LAṬ LIṄ LIṬ
LUṄ LUṬ LṚṄ LṚṬ
LEṬ LOṬ

Let us examine the validity of such a group-classifying technique. Pāṇini is not explicit on the use of the following symbols:

(1) *I* as the final of a suffix,

(2) *U* as the penultimate of an augment or substitute,

(3) *A I U Ṛ E O* as the medial of a conjugational group symbol and *U* of a Zero type,

(4) *Ṅ* as the final of a substitute, or as the final of *ti-Ṅ*, or as the initial of the feminizer suffixes,

(5) *Ṇ* as the final of a verbal stem.

Explanations for most of these are quite obvious, viz.

(1) *-Ṅ* and *-P* as finals of *ti-Ṅ* and *sU-P* serve the purpose of designating these classes, and have no other function, as by definition a group can be designated by the first member coupled by the last notational symbol;

(2) *Ṇ* as the final of verbal stem *iṆ* distinguishes it from the verbal stem *iṄ* which invariably takes the middle ending;

(3) *-I* as final of *ṄasI* (Ablative singular) serves to distinguish it from *Ṅas* (gen. sing.);

(4) both *I* and *U* as penultimate or final serve a protective purpose, so that the element preceding it by becoming final does not become by the force of definition (every final consonant of an abstract form is notational symbol; I.3.3 and subsequently zero, I.3.9), and that the notational symbol following it is kept apart for the set of functions assignable to it, e.g. in *ṆinI*, *I* protects *-n-* from being mistaken for a notational symbol, and in *GHinUṆ*, *U* stands between *n* and *Ṇ* for the protection of both;

(5) *U* has been reserved for a consonantal augment or substitute class, differing in positional function as well as phonemic shape, e.g., *tUK*, *sUṬ*, *nUM* stand for

-t *s-* *-n-*
(after) (before) (intervening);

(6) *Ṅ* as the initial of a femininizer suffix-group serves as a common denominator for three kinds of *ī*, having different types of accent shifts (denoted by the final *N*, *P*, *Ṣ*);

But *A I U Ṛ E O* as conjugational classifiers are not defined by themselves, the functional load in all these cases has been taken by a combined symbol as *LA LI* or *LO*, etc. It is not possible to find a commonly shared function assignable to *A*, *I*, *U*, *LAṬ* and *LAṄ* (present indicative and preterite past), as they share only the full stem form, but that full stem form is shared by *LIṄ* (optative), *LOṬ* (imperative) and *LEṬ* (subjunctive) as well. *LIṬ* (perfect) and $LIṄ_2$ (benedictive) share the non-full stem form but that feature is shared by *LUṄ* (aorist), *LṚṬ* (future) *LṚṄ* (conditional) and *LUṬ* (future preterite) as well. *LUṬ* (future preterite) and *LUṄ* (past aorist) share the non-full stem form, but that is not confined to these two again. We can only say that Pāṇini had in his mind only the two sets of common functions groupable under *Ṭ* and *Ṅ*. The vowel notations are arbitrary and serve merely to contrast one from the other of the same group, e.g., *LAṬ LIT LUṬ LṚṬ LOṬ LEṬ* are six different subcategories of *L-Ṭ*, while *LAṄ* $LIṄ_2$ *LIṄ*, *LUṄ LṚṄ* are five different subcategories of *L-Ṅ*. LU is a group term for three types of zero realization of a suffix (I.1.54), *ŚLU*, *LUK* and *LUP*, the functional load of *Ś-*, *-K* and *-P*, will be defined in the following chapter in addition to the positive type of zero (*Lopa*).

2.2.6. Coming to the groups designated by listing, we find two ways of listing:

(i) listing by an enumeration, separate from the main description to serve as a reference, being designated by the first member of the list, such as the verbal stem list (the *dhātupāṭha*) and the non-verbal stem list (the *gaṇapāṭha*),

(ii) listing by enumeration in the main description placing the name of the list at the beginning of the particular list, such as the different compound-groups.

2.2.6.1. As regards the first type of list (there are no doubt obvious discrepancies in the verbal stem list, as well as in the non-verbal stem list) the main purpose is economy and structural classification. Every group shares a common distribution class in terms of morphemics and morphophonomics, sometimes even in terms of sememics. The total number of non-verbal stem list is 224. There are some verbal stem lists as well as suffix lists, listed under the *Gaṇapāṭha*, which we ignore in the following chart. This list has a commentary by Vardhamāna.

The laudable attempt to reconstruct the readings of the individual members of each *gaṇa* by R. Birwe under the caption "Der Gaṇapāṭha zu den Adhayāyas IV and V der Grammatik Pāṇini's" on the basis of the common mean between the readings in the editions of A., S.K., Bhāṣā Vṛtti, Śabdakaustubha, Rama Kṛṣṇa's commentary on Gaṇapāṭha, Prakriyā Kaumudī and Kāśikā on one hand, and the grammars of Kātantra, Candragomin, Jainendra, Śākaṭāyana, Bhoja, Bopadeva, Sārasvata and Hemchandra and Gaṇaratnamahodadhi on the other, is of immense value.

The Gaṇapāṭha

List[9]	Number of Members	Reference in A.	Function Shared	Remarks
1. *aṃśu*, etc.	11	VI.2.193	Accent on the last syllable in Tatpuruṣa compound with *prati* as the first member	
2. *akṣadyūta*, etc.	10	IV.4.19	Has '*ṬH'aK* (= caused by)	
3. *aṅguli*, etc.	17	V.3.108	Has '*ṬH'aK* (= like)	
4. *ajā*, etc.	25	IV.1.4	Formed by *ṬāP* (= feminine suffix)	
5. *ajira*, etc.	6	VI.3.119	Does not have final short vowel replaced by long before *matUP*	
6. *anupravacana*, etc.	16	V.1.111	Has '*CH'a* (= having purpose)	
7. *anuśatika*, etc.	29	VII.3.20	Has lengthening of the first syllable of both the constituents before a *SBD*	
8. *apūpa*, etc.	25	V.1.4	Has *yaT* and '*CH'a* both (= meant for)	
9. *ayasmaya*, etc.	X	I.4.20	Irregular Vedic formations	List missing
10. *arīhaṇa*, etc.	48	IV.2.80	Has '*VU'Ñ* (= named after, caused by, above of, near to)	
11. *ardharca*, etc.	260	II.4.31	Are neuter as well as masculine	
12. *arśas*, etc.	14	V.2.127	Has *aC* (= having)	
13. *aśman*, etc.	21	IV.2.80	Has *ra* (= as in 10 above)	
14*. *Aśva*, etc.	81	IV.1.110	These proper names have '*PH'aÑ* (= borne in the family of)	
15. *aśva*, etc.	8	V.1.39	Does not have yaT (= a disaster caused by)	
16. *aśvapati*, etc.	17	IV.1.84	Has *aṆ*	
17. *ākarṣa*, etc.	20	V.2.64	Has *kaN* (= expert in)	
18. *ācita*, etc.	11	VI.2.146	Does not have last syllable accented after a *gati*	
19. *āhitagni*, etc.	9	II.2.37	The order may be reversed in compound	*ākṛtigaṇa*
20*. *Indrajanana*, etc.	X	IV.3.88	Has '*CH'a* (= a work written by)	
21. *iṣṭa*, etc.	45	V.2.88	Has *inI* (= by —)	
22. *uktha*, etc.	26	IV.2.60	Has '*ṬH'aK* (= studies and knows)	
23. *uñcha*, etc.	15	VI.1.160	Has last syllable acute accented	
24. *utkara*, etc.	61	IV.2.90	Has '*CH'a* (= as in 10)	
25. *utsa*, etc.	37	IV.1.86	Has *aÑ*	
26. *utsanga*, etc.	8	IV.4.15	Has '*ṬH'aK* (= takes in)	
27. *udgātra*, etc.	14	V.1.129	Has *aÑ* (= action or behavior of)	

[9] Lists marked with * represent groups denoting proper names in the list of *gaṇas* analysed below.

List	Number of Members	Reference in A.	Function Shared	Remarks
28*. *Upaka*, etc.	51	II.4.69	Has family name denoting suffix realized as zero	
29. *uras*, etc.	12	V.4.151	Has *kaP* at the end of a *bahuvrīhi*	
30. *ūrī*, etc.	38	I.4.61	Called *gati* (see *gati* in the following chapter)	
31. *ṛgayana*, etc.	25	IV.3.73	Has *aṆ* (=having the description of)	
32. *ṛśya*, etc.	31	IV.2.80	Has *Ka* (SBD)	
33*. *Aiṣukari* (proper names)	30	IV.2.54	Has *bhaktaL* (= country named after)	
34*. *Kaccha*, etc. (proper names of countries)	16	IV.2.133	Has *aṆ* (= belonging to)	
35. *kaḍāra*, etc.	19	II.2.38	Are placed as first member in *karmadhāraya* compound	
36. *kaṇḍū*, etc.	60	III.1.27	Has *yaK* (a SBD → BV)	Also an *ākṛtigaṇa*
37*. *Kaṇva*, etc. (proper names)	39	IV.1.105 (list) IV.2.111 (function)	*Kaṇva*, etc. a family name has *aṆ* (= belonging to)	A subgroup of *Garga*, etc.
38. *katri*, etc.	15	IV.2.95	Has *'ḌH'akaÑ* (= named after)	
39. *kaṭha*, etc.	14	IV.4.102	Has *'ṬH'aK* (= good at)	
40*. *Kamboja*, etc.	5	IV.1.175	Has SBD realized as zero	
41. *karki*, etc.	9	VI.2.87	Does not have the first syllable acute accented before *prastha*	
42*. *Karṇa*, etc. (proper names)	20	IV.2.80	Has *'PH'Ñ'*	
43. *karṇa*, etc.	14	V.2.24	Has *jāhac* (= the end of)	
44. *kalyāṇī*, etc.	12	IV.1.126	Has *'ḌH'aK* (= born of)	
45. *kaska*, etc.	18	VIII.3.48	Has *ṣ* ~ *s* optionally before it	Also an *ākṛtigaṇa*
46*. *Kārtakaujapa* (proper names)	28	VI.2.37	Has acute accent on the first constituent	
47. *kāśa*	24	IV.2.80	Has *ila* (SBD)	
48*. *Kāśī*, etc. (proper names)	34	IV.2.116	Has *'ṬH'aÑ* and *Ñi'TH'a* (SBD)	
49. *kāṣṭha*, etc.	17	VIII.1.67	Has the following constituent grave accented (to denote paying of respect)	
50. *kiṃśulaka*, etc.	7	VI.3.116	Has the final vowel lengthened before *giri*	
51. *kisara*, etc.	12	IV.4.53	Has *Ṣ'TH'aN* (=dealing in)	
52*. *Kuñja*, etc. (proper names)	17	IV.1.98	has *Ṣ'PH'aÑ* (= born in the family of)	
53. *kumuda*, etc.	25	IV.2.80	has *'ṬH'aC* (= SBD)	
54. *kumbhapadī*, etc.	41	V.4.139	irregular formations with *pada* as last constituent	

List	Number of Members	Reference in A.	Function Shared	Remarks
54. *kumuda*, etc.	15	IV.2.80	has '*ṬH'aK* (SBD)	
55*. *Kuru*, etc.	53	IV.1.151	has *Ṇya* (= born in the family of)	
56. *kulāla*, etc.	19	IV.3.118	has '*VU'Ñ* (= made by)	
57. *kṛta*, etc. (all past participle forms)	22	II.1.59	form a *tatpuruṣa* as second constituents with *śreṇi* etc. as first constituents	Also an *ākṛtigaṇa*
58*. *Kṛśāśva*, etc. (proper names)	33	IV.2.80	has '*CH'aṆ* (SBD)	
59. *koṭara*, etc.	5	VI.3.116	has the final vowel lengthened before *vana*	
60. *kratu*, etc.	6	VI.2.118	has acute accent on the first syllable when compounded with *su* in *bahuvrīhi*	
61. *krama*, etc. (all branches of learning)	5	IV.2.61	has '*VU'N* (= studies and knows)	
62. *kroḍa*, etc.	13	IV.1.56	when the final constituent does not have *ṄīṢ* (fem.)	
63*. *Krauḍi*, etc. (proper names)	20	IV.1.80	has *ṢyaṄ* (= fem.)	
64. *kṣubhna*, etc.	30	VIII.4.39	does not have *ṇ* ~ *n*	Also an *ākṛtigaṇa*
65. *khaṇḍika*, etc.	10	IV.2.45	has *aÑ* (= an accumulation of)	
66. *gami*, etc.	10	III.3.3	(future tense)	
67*. *Garga*, etc. (proper names)	116	IV.1.105	has *yaÑ* (= a family name)	have subgroups (a) *Lohita*, etc. (b) *Kaṇva*, etc.
68. *go*, etc.	24	V.1.2	has *yaT* (SBD)	
69. *gavāśva*, etc. (a list of copulative formations)	29	II.4.11	irregular formations	
70. *gaha*, etc.	59	IV.2.138	has '*CH'a*	Also an *ākṛtigaṇa*
71. *guḍa*, etc.	14	IV.4.103	has '*ṬH'aÑ* (= good in)	
72. *guṇa*, etc.	5	VI.2.176	are not acute accented in the last syllable in *bahuvrīhi*	Also an *ākṛtigaṇa*
73. *gṛṣṭi*, etc. (proper names)	10	IV.1.136	has '*ḌH'aÑ* (= a family name)	
74. *gotra*, etc.	17	VIII.1.27	(i) is grave accented after a finite verb	
		VIII.1.69	(ii) before this a finite verb is grave accented	
75. *gopavana*, etc.	8	II.4.67	does not have a SBD realized as zero	A subgroup of *bida*, etc.
76. *gosad*, etc.	18	V.2.62	has '*VU'N* (= a chapter having —)	

List	Number of Members	Reference in A.	Function Shared	Remarks
77. *gaura*, etc.	161	IV.1.41	has *ṄīṢ* (= fem.)	
78. *ghoṣa*, etc.	17	VI.2.85	when second member in compound has accent shifted on the first	
79. *ca*, etc.	195 (Böhtlingk)	I.4.57	are designated *nipāta* (enclitics) – when not standing for themselves as citation forms – and subsequently "avyaya" (indeclinable)	
80. *cāru*, etc.	11	VI.2.160	after *naÑ* are accented on the final syllable	
81. *cihaṇa*, etc.	10	VI.2.125	compounded with *kaṇṭha* in *Tatpuruṣa* have first syllable accented	
82. *cūrṇa*, etc.	12	VI.2.134	when second member in *Tatpuruṣa* compound, shift the accent to the first syllable	
83. *chātra*, etc.	22	IV.4.62	have *Ṇa* (SBD)	
84. *chātri*, etc.	7	VI.2.86	compounded with *śālā* as second member have accent shifted on the first syllable	
85. *cheda*, etc.	17	V.1.64	have *'ṬH'aN* (SBD)	
86. *Ḍatara*, etc.	4	VII.1.25	have *sU* and *am* (SBD) replaced by *adḌ*	a subgroup of *sarva*, etc.
87*. *Takṣaśilā*, etc.	15	IV.3.93	have *aÑ* (SBD)	
88. *tāraka*, etc.	94	V.2.36	have *itaC* (SBD)	an *ākṛtigaṇa*
89. *tāla*, etc.	8	IV.3.152	have *aṆ* (SBD)	
90*. *tika*, etc.	48	IV.1.154	have *'PH'iÑ* (SBD) (to denote family name)	
91. *tiṣṭhadgu*, etc.	31 or 32	II.1.17	are exceptional adverbial compound forms	
92. *tunda*, etc.	7	V.2.117	have *ilaC* (SBD)	
93. *tṛṇa*, etc.	18	IV.2.80	have *śas* (SBD)	
94*. *Taulvali*	42	II.4.61	do not have family name designating SBD realized as zero	
95. *tyad*, etc.	7	I.1.74 I.2.72 III.2.60 VII.2.102	designated *vṛddha* are sole residue (*ekaśeṣa*) when compounded with verbal stem *dṛś* have *KaÑ* have a replacement for their final segment before SBD	a subgroup of *sarva*, etc.
96. *daṇḍa*, etc.	15	V.1.66	have *ya* (SBD)	
97. *dadhipayasi*, etc.	19	II.4.14	are not singularised in copulative compound	
98*. *Dāmani*, etc.	24	V.3.116	have *'CH'a* (SBD)	
99. *dāsībhāra*, etc.	10	VI.2.42	have accent shift on the first member	*ākṛtigaṇa*
100. *dik*, etc.	28	IV.3.54	have *yaT* (SBD)	

List	Number of Members	Reference in A.	Function Shared	Remarks
101. *dṛḍha*, etc.	30	V.1.123	have *ṢyaÑ* (SBD)	
102. *devapatha*, etc.	21	V.3.100	have *KaN* (SBD) realised as Zero	*ākṛtigaṇa*
103. *dvāra*, etc.	11	VII.3.4	have *au* ~ *v* and *ai* ~ *y* instead of *vṛddhi* (lengthening) before SBD	
104. *dvidaṇḍi*, etc.	21	V.4.128	are formed by *iC* (SBD)	
105. *dvi*, etc.	5	V.3.2	do not have *tasIL*, etc. (SBD)	a subgroup *sarva*, etc.
106. *dhūma*, etc.	51	IV.2.127	have '*VU'Ñ* (SBD)	
107*. *Naḍa*, etc.	84	IV.1.99	have '*PH'aK* (SBD)	
108. *naḍa*, etc.	12	IV.2.91	have '*CH'a* (SBD) and also *kUK* augment before it	have a subgroup *vilva*, etc.
109. *nadī*, etc.	17	IV.2.97	have '*ḌH'aK* (SBD)	
110. *nirudaka*, etc.	14	VI.2.184	are accented on the final syllable	*ākṛtigaṇa*
111. *niṣka*, etc.	7	V.I.20	have '*ṬH'aK* (SBD)	
112. *nyaṅku*, etc.	24	VII.3.53	are formed by *kU* ~ *cU*	
113*. *Pakṣa*, etc.	39	IV.2.80	have '*PH'aK* (SBD)	
114. *pad*, etc.	7	VI.1.177	have accent shift on weak case ending	referred to in VI.1.62 itself
115. *parpa*, etc.	8	IV.4.10	have *Ṣ'ṬH'aN* (SBD)	
116*. *Parśu*, etc.	12	V.3.117	have *aṆ* (SBD)	
117*. *Paladī*, etc.	18	IV.2.110	have *aṆ* (SBD)	
118. *palāśa*, etc.	9	IV.3.141	have *aÑ* (Optionally) (SBD)	
119. *pātresammitāḥ*, etc.	34	II.1.48	are irregularly formed *Tatpuruṣa* compound forms	*ākṛtigaṇa*
120. *pāman*, etc.	16	V.2.100	have *na* (SBD)	
121*. *Pāraskara*, etc.	7	VI.1.157	are irregular formations	*ākṛtigaṇa*
122. *pāśa*, etc.	15	IV.2.49	to designate names have *ya* (SBD)	
123. *piccha*, etc.	9	V.2.100	have *lac* (SBD)	
124. *pīlu*, etc.	8	V.2.24	have *kuṇaP* (SBD)	
125. *purohita*, etc.	54	V.1.128	have *yaK* (SBD)	
126. *puṣkara*, etc.	33	V.2.135	have *inI* (SBD)	
127. *pṛthu*, etc.	31	V.1.122	have *imaniC* (SBD)	
128. *prṣodara*, etc.	9	VI.3.109	are irregular formations of internal sandhi	*ākṛtigaṇa*
129*. *Paila*, etc.	25	II.4.59	have family name forming SBD realized as zero	*ākṛtigaṇa*
130. *pragadin*, etc.	10	IV.2.80	have *Ñya* (SBD)	
131. *pratijana*, etc.	12	IV.4.99	have '*KH'aÑ* (SBD)	
132. *pravṛddha*, etc.	7	VI.2.147	have final syllable accented	*ākṛtigaṇa*
133. *pra*, etc.	22	I.4.58 I.4.59 I.4.60	are designated *nipāta* (enclitic) *upasarga* (preverb) and *gati*	
134. *priyā*, etc.	16	VI.3.34	exception to masculinazation in compound	
135. *prekṣā*, etc.	25	IV.2.80	have *inI* (SBD)	

List	Number of Members	Reference in A.	Function Shared	Remarks
136. *plakṣa*, etc.	8	IV.3.164	have *aṆ* (SBD)	
137. *bala* (1), etc.	15	IV.2.80	have *ya* (SBD)	
138. *bala* (2), etc.	21	V.2.136	have *matUP* (SBD)	
139. *bahu*, etc.	45	IV.1.45	have optionally *ṄiṢ* (SBD) feminine	
140*. *Bāhu*, etc.	62	IV.1.96	have *iÑ* (SBD)	
141*. *Bida*, etc.	55	IV.1.104	have *aÑ* (SBD)	have subgroup *harita*, etc.
142. *bilvaka*, etc.	10	VI.4.153	have '*CH'a* realized as zero	a subgroup of *naḍa*, etc.
143. *bilva*, etc.	13	IV.3.136	have *aṆ* (SBD)	
144. *brāhmaṇa*, etc.	106	V.1.124	have *ṢyaÑ*	*ākṛtigaṇa*
145. *bharga*, etc.	8	IV.1.178	do not have family forming SBD realized as zero	
146. *bhastrā*, etc.	7	IV.4.16	have *Ṣ'ṬH'aN* (SBD)	
147. *bhikṣā*, etc.	16	IV.2.38	have *aṆ* (SBD)	
148. *bhidā*, etc.	23	III.3.104	are *aṄ* (SBD) formed bases	
149. *bhīma*, etc.	19	III.4.74	are irregularly SBD formed basis	*ākṛtigaṇa*
150. *bhṛśa*, etc.	29	III.1.12	have *KyaṄ* (SBD → BV)	
151*. *Bhauriki*, etc.	10	IV.2.54	have *vidhaL* (SBD)	
152. *madhu*, etc.	32	IV.2.86	have *matUP* (SBD)	
153. *manojña*, etc.	28	V.1.133	have '*VU'Ñ* (SBD)	
154. *mayūravyaṃsaka*, etc.	85	II.1.72	are *Tatpuruṣa* compound formations	
155. *mahiṣī*, etc.	11	IV.4.48	have *aN* (SBD)	
156. *mālā*, etc.	10	VI.2.88	have accent on the first syllable when compounded with *prastha*	
157. *yava*, etc.	28	VIII.2.9	does not have *m* of *matUP* replaced by *v*	*ākṛtigaṇa*
158*. *Yaska*, etc.	38	II.4.63	have family name forming SBD realised as zero in the masculine	
159. *yājaka*, etc.	12	II.2.9	as second member in *Tatpuruṣa* compound with the first member with genitive ending	
		VI.2.151	when second member in a compound has accent on the final syllable	
160. *yāva*, etc.	21	V.4.29	have *KaN* (SBD)	
161. *yuktārohī*, etc.	17	VI.2.81	are accented on the first syllable	
162. *yuva*, etc.	40	V.1.130	have *aṆ* (SBD)	
163*. *Yaudheya*, etc.	9	IV.1.178	do not have family name forming SBD realized as zero	163 and 163 (a)
163(a)*. *Yaudheya*, etc.	12	V.3.117	have *aÑ* (SBD)	seems to be identical with 163

List	Number of Members	Reference in A.	Function Shared	Remarks
164. *rajata*, etc.	12	IV.3.154	have *aÑ* (SBD)	
165. *rasa*, etc.	10 or 9	V.2.95	have *matUP* (SBD)	
166. *rājadanta*, etc.	49	II.2.31	have the second member as construed to be the constituent of the compound	
167. *rājanya*, etc.	25	IV.2.53	have '*VU'Ñ* (SBD)	*ākṛtigaṇa*
168*. *Revatī*, etc.	12	IV.1.146	have '*ṬH'aK* (SBD)	
169*. *Raivatika*, etc.	7	IV.3.131	have '*CH'a* (SBD)	
170. *loman*, etc.	9	V.2.100	have *Śa* (SBD)	
171. *lohita*, etc.	9	III.1.13	have *KyaṢ* (SBD → BV)	*ākṛtigaṇa*
172*. *Lohita*, etc.	25	IV.1.18	have *Ṣ'PH'a* (SBD) in the feminine only	a subgroup of *garga*, etc.
173. *vaṃśa*, etc.	11	V.1.50	compound with *bhāra* have '*ṬH'aN* (SBD)	
174. *vanaspati*, etc.	10	VI.2.140	have original accent on both the members of the compound form	
175. *varaṇa*, etc.	29	IV.2.82	have SBD realised as zero	*ākṛtigaṇa*
176. *varāha*, etc.	17	IV.2.80	have *kaK* (SBD)	
177. *vargya*, etc.	list missing	VI.2.131	as second member in a *Tatpuruṣa* compound shift the accent to the first syllable	
178. *vasanta*, etc.	13	IV.2.63	have '*ṬH'aK* (SBD)	
179*. *Vākina*, etc.	6	IV.1.158	have '*PH'iÑ* (SBD) with *kUK* augment	
180. *vinaya*, etc.	18	V.4.34	have '*ṬH'aK* (SBD)	
181. *vimukta*, etc.	29	V.2.61	have *aṆ* (SBD)	
182. *vispaṣṭa*, etc.	10	VI.2.24	have original accent on the first member when compounded with qualifiers	
183. *vṛṣa*, etc.	28	VI.1.203	have accent on the last syllable	*ākṛtigaṇa*
184. *vetana*, etc.	20	IV.4.12	have '*ṬH'aK*	
185. *vyāghra*, etc.	21	II.1.56	are compounded as compared with (*upamāna*)	
186. *vyuṣṭa*, etc.	15	V.1.97	have *aṆ* (SBD)	
187. *vrīhi*, etc.	22	V.2.116	have *inI* and '*ṬH'aÑ* (SBD)	
188. *śandikā*, etc.	8	IV.3.92	have *Ñya* (SBD)	
189. *śarat*, etc.	23	V.4.107	have *ṬaC* in adverbial compound formation	
190. *śara* (1), etc.	7	IV.3.144	have *mayaṬ* (SBD)	
191. *śara* (2), etc.	9	VI.3.120	have final vowel lengthened before *matUP* (SBD)	
192. *śarkarā*, etc.	12	V.3.107	have *aṆ* (SBD)	
193. *śākhā*, etc.	13	V.3.103	have *yaT* (SBD)	
194*. *Śārṅgarava*, etc.	25	IV.1.73	have *ÑiN* feminine SBD	
195*. *Śiva*, etc.	91	IV.1.112	have *aṆ* (SBD)	*ākṛtigaṇa*
196. *śundika*, etc.	9	IV.3.76	have *aṆ* (SBD)	

List	Number of Members	Reference in A.	Function Shared	Remarks
197*. *Śubhra*, etc.	95	IV.1.123	have '*ḌH'aK* (SBD)	
198. *śaunda*, etc.	16 or 14 acc. to some	II.1.40	form locative *Tatpuruṣa* compound as second members	
199*. *Śaunaka*, etc.	21	IV.3.106	have *ṆinI* (SBD) in Vedic lang.	
200. *śramaṇa*, etc.	15	II.1.70	form descriptive compound as second member with *kumāra*	
201. *śreṇī*, etc.	26	II.1.59	form descriptive compound with *kṛta*, etc. as second member	
202. *sakhi*, etc.	31	IV.2.80	have '*ḌH'aÑ*	
203. *saṅkala*, etc.	41	IV.2.75	have *aÑ* (SBD)	
204*. *Saṅkāśa*, etc.	40	IV.2.80	have *Ṇya* (SBD)	
205. *santāpa*, etc.	21	V.1.101	have *yaT* (SBD)	
206. *sandhivelā*, etc.	9	IV.3.16	have *aṆ* (SBD)	
207. *sapatnī*, etc.	9	IV.1.35	formed by *nUK* augment after *pati*	
208. *sarva*, etc.	29	I.1.27	are designated *Sarvanāma* (pronoun) for all purposes except those specified in group A.II.28–36, have subgroups, 1) *Ḍatara*, etc., 2) *tyad*, etc., 3) *dvi*, etc.	
209. *savana*, etc.	21	VIII.3.110	do not have *ṣ* ~ *s* replacement after *r*	
210. *sākṣāt*, etc.	30	I.4.74	are designated *gati*	*ākṛtigaṇa*
211. *sidhma*, etc.	49	V.2.97	have *laC* (SBD)	
212*. *Sindhu*, etc.	13	IV.3.93	have *aṆ* (SBD)	
213. *sukha*, etc.	12	III.1.18 VI.2.170	have accent shift on the last syllable with a past participle form as the second member in compound	
213(a). *sukha*, etc.	16 or 17	V.2.131	have *inI* (SBD)	
214. *sutaṅgama*, etc.	18	IV.2.80	have *iÑ* (SBD)	
215*. *Suvāstu*, etc.	15	IV.2.77	have *aṆ* (SBD)	
216. *suṣāmā*, etc.	20	VIII.3.98	formed with *ṣ* ~ *s* replacement	*ākṛtigaṇa*
217. *sthūla*, etc.	14	V.4.3	have *kaN* (SBD)	
218. *snātvī*, etc.	2	VII.1.49	are irregular Vedic forms	*ākṛtigaṇa*
219. *svar*, etc.	155	I.1.37	are designated indeclinables (*avyaya*)	
220. *svasṛ*, etc.	7	IV.1.10	do not have *ṬāP* (SBD) feminine	
221. *svāgata*, etc.	7	VII.3.7	have *au* ~ *v* and *ai* ~ *y* instead of *vṛddhi* of the first syllable vowel before SBD	
222*. *Harita*, etc.	26	IV.1.100	have *aÑ* realised as zero (SBD family name forming)	a subgroup *bida*, etc.

List	Number of Members	Reference in A.	Function Shared	Remarks
223. *harītakī*, etc.	17	IV.3.166	have *aṆ* (SBD) realized as zero	
224. *hastin*, etc.	19	V.4.138	do not have the final vowel of *pāda* realised as zero, when first member in a compound	

This listing must have had a Pāṇinian version, as is clearly indicated by the subgroups, but most of the stems that have been listed here, particularly the proper names (indicated by an asterisk in the list above) and words not ordinarily used in literary language, became obsolete. Either more lists were added (as by Kātyāyana in his Vārttika to the extent of 25 more lists) or variant readings crept in, so that a critical examination of the lists has to be made, and this has been accomplished by R. Birwe through his commendable work referred to before in this chapter.

However, the meanings and the usages of many a stem included in the *Gaṇapāṭha* need further exploration. This listing (except when serving the purpose of nomenclature of certain specific classes as in the case of enclitics, pronouns or indeclinables) is confined to such stems that have specifically defined peculiar behaviour, and this goes on to show the comprehensive nature of the analysis that Pāṇini had undertaken.

2.2.7. Another such list is that of the Verbal stems. This list has a valuable commentary, *Kṣīrataraṅginī* by Kṣirasvāmin, who refers to the nature of the stupendous task of reconstructing the list in view of the corrupt readings of the vocal tradition, in his introductory verses.[10] He is aware of the contradictions brought by the preservers of the text, because of carelessness on their part, and probably more due to the fact that a large number of the verbal stems had become obsolete in the literary language. He therefore says: "I have to shut my eyes to these contradictions (when I can not resolve them)." The list of the tenth class was perhaps the worst preserved, as *Kṣīrasvāmin* cries out in despair: "I commented on the list of the nine classes somehow or other catching a straw here and there, but when I have started the tenth class list beginning with *cur*, where even great savants have failed, I do not know what to accept and what to reject in the text, as it is weak in tradition in both meaning and form of the list."[11] *Kṣīrasvāmins's* date, as indicated by Liebich, is 11th century A.D.[12]

The listing in the *Dhātupāṭha* is under ten major classes, viz.

[10] *Kṣīrasvāmin*, K. T., Introductory verses.

[11] vyākhyāteyaṃ navagaṇī kuśakāśāvalambanāt, curādiradhunārabdho, yatra bhagnā mahārathāḥ. pāṭherthe cāgamabhraṃsān mahatāmapi mohataḥ, na vidmah kiṃ nu jahimah kiṃ vātrādadhmahe vayam. *Kṣirataraṅgiṇī* (opening verses on the X Gaṇa).

[12] "Kṣīrataraṅgiṇī", Bruno Liebich, *Indische Forschungen*, Doppelheft 8/9, pp. 204.

	Full-Stem former suffix		
bhū	*ŚaP*	A.III.1.68	*ŚaP* alternating
ad	*LUK ~ ŚaP*	II.4.72	
hu	*ŚLU ~ ŚaP*	II.4.75	
div	*ŚyaN ~ ŚaP*	III.1.69	
su	*Śnu ~ SaP*	III.1.73	
tud	*Śa*	III.1.77	non *ŚaP* alternating
rudh	*ŚnaM*	III.1.78	
tan	*u*	III.1.79	
krī	*Śnā*	III.1.81	
cur	*ṆiC*	III.1.25	

This method has been well defended by B. Shefts in her Grammatical Method in Pāṇini.

The list is then arranged into groups sharing common accent-patterns, which can be of the following types:

(a) the stem may be accented,

(b) the stem may be unaccented in the list, and then (i) the group classifier vowel may be accented, or (ii) the group classifier vowel may be unaccented, or (iii) the group classifier vowel may have circumflex accent.

Sometimes monosyllablic stems ending in vowels are classified by consonant classifiers if they have a distinctive bunch of functions in terms of morphemic distribution. The arrangement within such a sub-group of lists sharing common accent patterns is not in any alphabetical order, but quite often stems sharing the same vowel classifier are grouped together, as also phonemically similar stems like *k·úrd*, *kh·úrd A* and *g·úrd A*. The specific functions of each classifier is charted below:

Accent	*Function*
(1) (a) Accent (Acute) on the stem	(1) by elimination an augment *iT* to a non-full-stem class suffix beginning with a consonant belonging to *seṭ v-L* excepting those enumerated in A.VII-2
(b) Grave on the stem	(2) if ending in *m* does not have lengthening of the penultimate vowel before *CIṆ*, and *Ñ*- and *Ṇ*-SBVD with the exception of *ācam* stem (A.VII.3.34) an augment *iṬ* as described above (VII.2.10)
(2) (a) Accent (Acute) on the classifier vowel (which is nasalised by definition, in order to distinguish it from the non-classifier vowel A.I.3.2)	The Active ending distribution class of the stem by elimination (I.3.78)

	Accent	*Function*
	(b) (Grave) on the classifier vowel.	(1) by definition, the middle ending distribution class of the stem (I.3.12) (2) makes the accent of the SBVI following it grave (VI.1.186) (3) makes Ø ~ nasal of the stem replacement before *K-* and *N-* SBV excepting before *KtiC* and optionally before *LyaP*
	(c) (Circumflex) on the classifier vowel (I.3.72)	(i) by definition the middle ending distribution class if the action is for the subject otherwise active ending class by elimination
		Vowels
(1)	*-A*	(1) Accent of the following SBVI is grave (VI.1.186) (2) does not add *iṬ* augment to *tāsI* (of *LUṬ*) and *thaL* (of *LṚṬ*)
(2)	*-Ā* --------	does add *iṬ* augment to *Kta*, *KtavatU* (VII.2.16) but optionally adds *iṬ* to these if the passive or the first object is indicated (VII.2.17)
(3)	*-I* --------	adds *nUM* augment to the stem (VII.1.58)
(5)	*-Ī* --------	does not add *iṬ* to *Kta*, *KtavatU* (VII.2.14)
(6)	*-U* --------	does not add *iṬ* to *Ktvā* (VII.2.56)
(7)	*-Ū* --------	adds *iṬ* optionally to a nonfull-stem suffix beginning with *v-L*
(8)	*-Ṛ* --------	does not have shortening of the penultimate before *CaṄ* when is causative. (VII.4.2)
(9)	*-Ḷ* --------	has *aṄ* ~ *CLI (LUṄ)* (III.1.55)
(10)	*-O* --------	has *n* ~ *t* (of *Kta* and *KtavatU*) (VIII.2.45)
		Consonants
(1)	*-IR* (as different from I)	has *aṄ* ~ *CLI* (*LUṄ*) replacement (III.1.57)
(2)	*-Ṅ*	(1) after vowel ending stems only, indicates its membership of middle ending distribution class (I.3.12) (2) makes the accent of SBVI following it grave (VI.1.186)

Consonants

(3) *-Ñ*	after vowel ending stems only, indicates its membership of middle ending distribution class if the action is for the subject (I.3.72) otherwise of active ending class by elimination.
(4) *ÑI-*	(4) has *Kta* to indicate the present tense (III.2.187)
(5) *ṬU*	has *athuC* SBVD (III.3.89)
(6) *ḌU*	has *Ktri* SBVD (III.3.88)

In the tenth class-list, the accent on the stem is not found in the recorded text. It might be that this list be a jumbled up version of primary and secondary stems, as is quite evident from the entries after 367 (Liebich's edition of Kṣīrataraṅgiṇī). This list differs from the non-verbal stem-list in the respect that it also gives meaning of the stem. It is quite evident from the corroboratory evidence of Mbh. that the *dhātu* (verbal stem) list had been preserved by the tradition as an integral part of the Aṣṭādhyāyī, and the meanings had not varied much by his time. In the 24 instances of stems quoted by Patañjali together with meaning, there is complete agreement in 15, and the rest seems to have changed either by extension or contraction. To reconstruct the verbal stem-list is possible only when the entire verb-list of the modern dialects are sorted out and their etymologies worked out neatly. Otherwise mere literary evidence can but help in reconstructing only a part ot list.

The verbal stem has been cited in four ways in the main body of the description:

(1) its abstract phonemic form, such as *bhū*, *krī* etc., is inflected as a non-verbal stem in its citation form; the inflected form for the ablative and genitive singular of monosyllabic vowel ending stem forms, however, has always *iy* or *uv* ~ *ī* or *ū* respectively, e.g. *bhuvah* (bhū), *kriyah* (krī), *niyah* (nī) (I.3.36), and zero ~*ā* (of monosyllabic vowel ending stem form), eg. *jñaḥ* (jñā). (I.3.44), *hvaḥ* (hve) (I.3.30), and *r* ~ *ṝ*, e.g., *graḥ* (gṛ) (I.3.51);

(2) its phonemic form followed by its classifier (mostly when the stem ends in a short vowel and is to be differentiated from a similar stem ending in a long vowel) e.g. *kṛÑ* to be differentiated from *kṝ* and its inflection is like a normal consonant non-verbal stem;

(3) its phonemic form followed by *a* or *i*, sometimes for the sake of convenience for oral transmission, when there are more than one stems cited in the same rule, e.g. *budha yudha naśajana*... (I.3.86) or *gamyṛcchipracchi* (I.3.29), and quite frequently even otherwise is inflected as a masculine -i stem;

(4) its third person present indicative active singular form sometimes to differentiate it from a similar stem conjugated in a different class, e.g. *eti* (*iÑ*) as different from *ayati* or *īte* (*iÑ*) in III.1.109; this type of citation was very common, as is evidenced by its frequent usage by Patañjali in his Mbh.; sometimes even when the stem is

conjugated in the middle class, the citation form of this type is active, e.g. *mṛlyati* (from *mṛÑ*) instead of *mṛlyate* (I.3.61); the inflection is again like that of masculine -i non-verbal stem.

2.2.8. Groups indicated by enumeration in the main body of the description are:

(1)	*Kāraka* (verbal relation)	I.4.24–55
(2)	*Nipāta* (enclitic)	I.4.57–97
(3)	*Karmapravacanīya* (governing preposition)	I.4.84–97
(4)	*Samāsa* (compound)	II.1.4–II.3.73
(5)	*Avyayībhāva* (adverbial compound)	II.1.5–II.1.21
(6)	*Tatpuruṣa* (determinative)	II.1.24–II.2.22
(7)	*Bahuvrīhi* (possessive)	II.2.24–II.2.28
(8)	*Pratyaya* (suffix)	III–V chapters
(9)	*Pratyaya* (suffix) addable to verbal stem only	III.1.96–III.4.117
(10)	*Kṛtya* (suffixes of class 9 functioning as subjunctive, obtative or futurative verbal constructions as well)	III.1.96–III.1.132
(11)	*Strī Pratyaya* (suffix addable to a non-verbal stem to make it a feminine stem)	IV.1.4–81
(12)	*Taddhita* (Secondary suffixes)	IV.1.77–V.4.160

The purpose of this type of grouping is to avoid a definition in any other term than its members of the classes defined by each enumeration block.

CHAPTER 3

TECHNICAL RULES: DEFINITIONAL AND APPLICATIONAL RULES

3.0. GENERAL OBSERVATIONS

3.0.0. The first two chapters of the A. are designated by the commentators as *Sañjñā* (definition) and *Paribhāṣā* (applicational rules). In fact some definitions and application rules, for economy or for the reason of the limited range of the particular rule, are placed even outside these two chapters. There is no clear-cut demarcation between these two types except that the syntactic structure of a definitional rule is clearly differentiated by two terms placed in case in apposition in the nominative case (while in an applicational rule even where the two terms used in the rule are in the nominative, as in *samarthaḥ padavidhiḥ* II.1.1, where one is merely a modifier of the other); the usual order is of course the definitional term followed by the defined term. This order is reversed only in I.1.1 *(vṛddhirādai-C)*, where the auspicious word *vṛddhi* (prosperity in nongrammatical speech) is placed before the definition. The application rules intersperse with the definition rules for twofold reasons: Firstly, an economy of terms is thus effected by connecting the same term to definition as well as application, e.g., the application rules regarding realization of a suffix as zero follow immediately the definition of a zero realization (I.1.60–I.1.63). Secondly, the order of rules is pertinent for operation in a circle, so that, if a particular definition is to apply to a term and is not to be affected by a rule of application delimiting its application, that definition will be taken out of the jurisdiction of the particular rule of application, e.g., the adjectival compound *(Karmadhāraya)* is defined in I.2.42, while the other compounds in II.1.2, simply because of the definitions given in Chapter II.1.2, are governed by the rule of application in I.4.1, so that a term defined therein cannot have two definitions at the same time. An adjectival compound, therefore, cannot remain in terms of structure a determinative *(Tatpuruṣa)* compound at the same time.[1] This is easily resolved by taking out that definition from the range of the application rule I.4.1.

3.0.1. The general features of a definitional rule of Pāṇinī are:

[1] See for a detailed discussion of the rationale of the order in the *Aṣṭādhyāyī* seemingly anomalous, Bhattacarya, "Some anomalies in the A. and their justification", *Bhāratīya Vidyā*, Vol. XV, p. 110-119.

(1) it is given in structural terms, so that extra-linguistic criteria should not be applied to define a particular term, only the structural relation or position or membership or distribution should be the criteria;

(2) it is unambiguous and clearly contrastive;

(3) it is limited by rules of application in order and mode of operation;

(4) it is an abstraction (rather than a concrete property of that which it defines) valid only to the description of the relationship between the analyzable units of utterance in a particular language;

(5) it is implicit by elimination, enumeration or juxtaposition, wherever it is not explicit.

3.0.2. The broad heads under which the definitional rules can be classified are:[2]

(1) classes defined in terms of membership: (a) stems (*dhātu* and *prātipadika*), (b) suffixes *(pratyaya)* and suffix subgroups, (c) phoneme groups *(pratyāhāra)*.

(2) combinations defined in terms of its constituents (or components): (a) sentence, (b) word inflected, (c) word compound, (d) word derived, (e) combination of classifiers, (f) combination of phonemes.

(3) units defined in terms of their representation at a lower strata (i.e., to say "emes" defined in terms of "allos")[3]: (a) supramorphemic units represented as a morpheme, (b) morpheme represented as a morphophonemic entity, (c) morphophoneme represented as phoneme, (d) phoneme represented as phonetic entity.

(4) relates in terms of relative position or function: (a) cases, (b) substitutable component in a compound, (c) substitutable component in primary derivation, (d) substitutable component in secondary derivation, (e) classifiers.

3.1. DEFINITIONAL RULES

3.1.0. We intend here to chart out the definitions under the aforesaid categories, and to indicate wherever the definition is implicit. The classes already defined in the

[2] Sydney M. Lamb, "On the mechanization of syntactic analysis", page 1: "There are three (and only three) types of hierarchical relationships existing among the structural units of language. They are: (1) that of a *class* to its members (e.g. vowel /a/, noun; boy), (2) that of *combination* to its components (e.g. /boy /b/, [men and women]); and (3) that of an *eme* to its *allos* (e.g. /t/: (t')). These relationships may be called hierarchical because in each of them there is one unit which is in some way on a higher level than others".

[3] "But the relationship of an *eme* to its allo is really one of representation. That is, the eme is *represented* by its allos on a different level. Thus the recognition of this type of relationship involves the recognition of separate levels. These levels, however, must be clearly distinguished from other kinds of levels which are set up for dealing with other kinds of relationships. Accordingly, we may use a distinctive designation, such as *stratum*. In any instance of the eme: allo relationship, then *the eme* has its existence on one stratum, its allos on the adjacent lower stratum. Every unit of linguistic structure exists on one and only one stratum, and classes and combinations of items always have their existence on the same stratum as those items" (Sydney M. Lamb, *On the mechanization of syntactic analysis*, p. 2).

preceding chapters have merely been mentioned by name, the details have not been reduplicated.

Defined class	Members	Reference if explicit	Remarks if any
A. Stems			
(1) Verbal Stems (*dhātu*)			
(a) Primary (BV_1)	*bhū*, etc.	I.3.1	
(b) Secondary (BV_2)	stems formed by B/BV + *saN*, etc., enumerated in III.1.5–31	III.1.32	
(i) desiderative (*saN*)	$BV_1 + saN \rightarrow BV_2$	Implicitly covered	
(ii) denominative (*Kya*)	$BV_1 + KyaC/\dot{N}/\dot{S} \rightarrow BV_2$		
(iii) causative (*Ṇi*)	$BV_1 + \dot{N}i\dot{N}/C \rightarrow BV_2$		
(iv) iterative (*yaṄ*)	$BV_1 + ya\dot{N} \rightarrow BV_2$		
Verbal stems subclassified by classifiers described in the preceding chapter under the following main heads:			
(i) non-*i*-augmenting (*aniṬ*)	(i) unaccented monosyllabic stems (in the list of verbal stems, *dhātupāṭha*)	VII.2.10	
	(ii) other stems under specific environments	VII.2.11–26, 59–65	
(a) Exclusively middle ending (*ātmanepada*)	(i) unaccented vowel – classified and -*Ṅ* classified	I.3.12	
	(ii) all stems under passive	I.3.13	
	(iii) other stems in specified environments enumerated in	I.3.14–71	
(b) Middle ending (only if the action is for the subject) otherwise active ending class	(i) circumflex accented vowel classified and *Ñ* classified stems	I.3.72	
	(ii) other stems in specified environments enumerated in	I.3.73–77	
(c) Exclusively active ending class	(i) by elimination the rest, i.e., the acute accented vowel classified and others	I.3.78	
	(ii) other stems in specified environments enumerated in	I.3.79–93	
(ii) *i*-augmenting (*seṭ*)	(i) the residue of (i) under non -*i*- augmenting	VII.2.10	
(a), (b), (c) as above	(ii) other stems in specified environments enumerated in	VII.2.35–36, 52–54, 58, 66–78	
(iii) optionally -*i*-augmenting (*veṭ*)	(i) stems enumerated in	VII.2.27–34, 37–51, 55–57	
(a), (b), (c) as above			
Verbal stems subclassified on the			

Defined class	Members	Reference if explicit	Remarks if any
basis of initial, final or penultimate phonemes detailed under the *Śiva sūtra Pratyāhāra*			
(2) Nonverbal Stems (*prātipadika*)			
(a) Primary (B_1)	Nonverbal stem and non-suffix meaningful units (residue)	I.2.45	
(b) Secondary (B_2)	BV + SBVD → B_2 (primary derivation)	I.2.46	
	B_1 + SBD → B_2 (secondary derivation)		
	B + B/BV → B_2 (compound)		
Non-verbal stems subclassified on the basis of distribution classes			
(a) indeclinable (those which have zero realization of SBI and SBD (Feminine) II.4.82 read with 83 and 86) B_0	(i) *svar*, etc. (list of stems enumerated in the *gaṇapāṭha*)		
	(ii) enclitics (*nipāta*) listed and enumerated	I.1.37	
	(iii) B + SBD → B_2 when fixed in one SBI	I.1.38	
	(iv) B_1 V + SBVD → B_2 if SBVD ends in *m* or *e*, *o*	I.1.39	
	(v) B_1 V + *ktvā/tosuN/kasuN* → B_2	I.1.40	
	(vi) every adverbial compound (*avyayībhāva*)	I.1.41	
subclass of indeclinable			
(i) *nipāta* enclitics (that which can not occur independently) subclass of *nipāta*	forms listed under —	I.4.57–97	
(1) sentence or word connectives or emphatics	*-ca*, etc.	I.4.58	except when they are citation forms
(2) *upasarga* (preverb) and *gati* (moving with the verb), both are preverbs, *gati* is more inclusive while *upasarga* is limited to list *pra*, etc.	(i) list *pra*, etc. (in conjunction with a verb)	I.4.59	
	(ii) forms enumerated under specific environments and with specific meanings in	I.4.60–79	The functional value of the term *nipāta* is in sentence accent
(3) governing prepositions (*karmapravacanīya*) which are in conjunction with a non-verbal stem in a definite case ending	enumerated under specific environments and with specific meanings in	I.4.84–97	
(ii) the rest	by elimination of the above	implicit	
(b) declinable			
(i) *sarvanāma* (pronoun (Bp)) which have a specific range of	list *sarva* etc., with exceptions and under specific	I.1.27	

Defined class	Members	Reference if explicit	Remarks if any
functions different from the rest	environments noted in	I.1.28–37	
(ii) *saṅkhyā* (number classifier)	*bahu, gaṇa* and Bp + *vatU/ḌatI* → B_2	I.1.23	
(iii) *ṣaṭ* (indeclinable cardinal numerals ending in *ṣ* and *n*	(i) *pañcan* to *daśan*	I.1.24	
	(ii) *Bp* + *ḌatI* → B_2	I.1.25	
(iv) the rest	the residue of the above	implicit	
Non-verbal stems subclassified under distribution classes of derivatory suffixes described in the preceding chapter under the *gaṇas*			
Non-verbal stems subclassified by classifiers are very few, viz.:			
(1) *āṄ* as different from *ā* (= as far as etc. and preverb) (= so)			
(2) *naÑ* as different from *na* (*a-an*)			
(3) *aikāgārikaṬ* (V.1.113) (to denote its SBD (Feminine) *ṄīP* class)			
(4) *kuṭāraC* (V.2.30) *kuṇḍinaC* (V.2.70) (to denote its accent)			
Non-verbal stems subclassified by initial or final or penultimate vowel described under the *Śiva sūtra Pratyāhāra* chart			
(3) Suffixes (S)	all the forms listed in the nominative in chapters	III, IV, V	
I(A) Classified on the basis of distribution classes			
(1) suffixes addable to verbal stems as well as to non-verbal stems to form verbal stems (SB/BV D → BV_2)	*saN* etc., by enumeration in	III.1.5–31	
(2) suffixes addable exclusively to verbal stems			
(a) (i) before non-full stem class suffixes (*ārdhadhātuka*)	(i) *-sya-* (*LṚ*) *tasI* (*LU Ṭ*)	III.1.33	
	(ii) *-suP* (*LE Ṭ*)	III.1.34	
	(iii) *-ām* (*LIṬ*)	III.1.35–42	
	(iv) *-CLI* (*LU Ṅ*) and its alternants *siC Ksa, CaṄ, aṄ, CiṆ*	III.1.43–66	
(ii) before full stem class suffixes (*sārvadhātuka*)	(i) *-yaK* (Passive)	III.1.67	
	(ii) *-ŚaP* (Active) alternating with *ŚyaN, Śnu, Śa, ŚnaM, u, Śna, ŚLU, LU K* with different classes	III.1.68–89	
(b) suffixes forming a non-verbal stem (*kṛt*)	all the suffixes addable to a verbal stem other, than *ti-Ṅ* (SBVI), which form a non-verbal stem	III.1.93 read with III.1.92 and 1.2.46	

Defined class	Members	Reference if explicit	Remarks if any
(i) behaving like a verb syntactically (*kṛtya*)	*tavyaT* etc., enumerated in	III.1.96–132	
(ii) the rest	by enumeration and elimination (of SBVI)	III.1.133–III.4.76	
(b) compounded with a nonverbal stem preceding it	by enumeration in	III.2.1–101	
(c) suffixes forming a verb i.e., inflectional (*tiṄanta pada*) (*tiṄ + LA*)	*ti-Ṅ* (given in the preceding chapter with alternation described, termed *vibhakti*	III.4.79–112, I.4.104	
(iii) suffixes addable to verbs classified acc. to the non-full and full stem preceding it			
(i) full stem class (FSBV)	*ti-Ṅ* and *Ś-* class	III.4.113	
(ii) non-full stem class (NFSBV)	(i) the rest by elimination of the above	III.4.114	
	(ii) *LIṬ* (Perfect)	III.4.115	
	(iii) *LIṄ* (Benedictive)	III.4.116	
(3) suffixes addable to a nonverbal stem (SB)		IV and V chapters	
(i) inflectional suffixes addable to a nonverbal stem to form it a nonverbal word (*subanta pada*) (SBI)	*sU-P* (described in the preceding chapter), also called *vibhakti*	IV.1.2 I.4.103	
(i) (a) subclass of (i) strong ending class (*sarvanāmasthāna*)	(i) *Śi* (for Neuter Nom. and Acc. Pl.)	I.1.62	
(ii) derivational suffixes	(ii) *su-Ṭ* (Non-Sing. Dual and Plural Acc. Sing. Dual, nonneuter)	I.1.42	
(i) to form a feminine stem (SBDF) from masculine (*strī pratyaya*)	*ṬāP* etc. enumerated in IV.1.6–81	IV.1.3	
(ii) to form a secondary stem (SBD) (*Taddhita*)	*ti* etc. enumerated in IV.1.77–V.4.160	IV.1.76	
(B) suffixes as classified by classifiers	suffixes sharing the particular classifier, by definition a classifier can be assigned to a class which even does not have it	implicit I.2.1–26	indexed alphabetically as Index 2B
suffixes classified by the initial, final or penultimate phonemes	described under the *Śiva sūtra Pratyāhāra* list		
II. Stems and Suffixes having a very limited membership designated by algebraic symbols or terms used by earlier grammarians			
(i) verbal stems			
ghu	*dā, dhā* (but not *dāP*)	I.1.20	
(ii) non-verbal stems			
(a) *nadī*	(i) *i-u* stems (feminine) except monosyllabic stems which have *-iy* or *uv* alteration, which can have	I.4.3 I.4.4	

Defined class	Members	Reference if explicit	Remarks if any
	this designation before *-ām* (gen. plural)		
	(ii) a short *-i, u* stems before SBI of *Ṅ-* class	I.4.6	
(b) *ghi*	(i) that rest *-i -u* under the rest situations excepting *sakhi*	I.4.7	
	(ii) *pati* (in a compound)	I.4.8	
(c) *vṛddha*	(i) stem which has its first vowel as *vṛddhi* (lengthened)	I.2.73	
	(ii) *tyad* etc. (listed)	I.2.74	
	(iii) *e-*, or *o* initialled stem in eastern dialect	I.2.75	
(iii) suffixes			
(i) *gha*	*taraP* and *tamaP* (comparative)	I.1.22	
(ii) *niṣṭhā*	*Kta* and *KtavatU*	I.1.26	
(iii) *sat*	*ŚatṚ* and *ŚānaC*	III.2.127	
(iv) *LA*	conjugational suffixes	I.4.99–100	

3.1.2. Combinations: Constituents (Components).

3.1.2.0. A sentence is a combination of interrelated inflected words marked by a sentence-accent marking that combination (VIII.1.16–17), described in VIII.1.18–74 and by pause defined in I.4.110. It can have a subclass of sentences marked by a supralong quantity and rising pitch on the word specified (VIII.2.82) in the description of the various types of combinations in VIII.2.83–VIII.2.108.

3.1.2.1. An inflected word is defined as a combination of stem (verbal) + *ti-Ṅ* (SBVI), or stem (non-verbal) + *sU-P* (SBI) in I.4.14. This definition is extended to phonological words for the purposes of external sandhi which are non-combinations, viz.:

(i) a stem ending in *-n* -before *Kya* (denominative suffix), I.4.15,

(ii) a stem before *s*-class suffix, I.4.16,

(iii) a stem before a SB (from *-sU* to *KaP* described in IV.1.2 to V.4.160) except strong SBI (*sarvanāmasthāna*, I.6.17) with the exceptions noted in I.4.18–19, where the denomination *bha* will overrule the denomination *pada*.

Wherever there is no overt inflectional ending as in the case of an indeclinable form, the inflectional ending is represented by zero.

3.1.2.2. An inflected word, as defined above, is a combination of a stem + an inflectional suffix. A non-verbal stem in its term, if secondary, can be a combination of the compound type, subclassed as

I. Adverbial *(avyayībhāva)* (II.1.5): (i) an indeclinable + a stem (II.1.6–16), (ii) a stem + a stem (as listed under list *tiṣṭhadgu* etc.) (II.1.17), (iii) *pāre* or *madhye* + a stem with a possessive force (II.1.18), (iv) a stem of the subclass *saṅkhyā* + a stem

(meaning a succession) (see under class members) (II.1.19), (v) a stem of the subclass *saṅkhyā* + a stem (name of a river) (II.1.20), (vi) a stem + a stem (name of a river) (II.1.21) when the combination represents a name of place or country. This combination class by definition is indeclinable and the determiner constant is the member placed first in the combinations above.

II. Determinative (*tatpuruṣa* II.1.22), subclassed as:

(i) adjectival *(karmadhāraya)* a combination of stems in case in apposition *(samānādhikaraṇa)* (I.2.42),

(ii) numeral *(dvigu)* as a combination of a numeral + a stem (II.1.52 read with II.1.23),

(iii) the rest. (a) The types combination of stems in case in apposition are: (i) numeral stem + a stem (II.1.23), (ii) a stem + its derogatory epithet stem (II.1.52), (iii) *pāpa* or *anaka* as epithets + a qualified stem (II.1.54), (iv) a stem (to which something is to be compared to) + a stem indicating the common property of comparison (II.1.55), (v) a stem (which is compared to) + *vyāghra* etc. (compared with) (II.1.56), (vi) a stem (qualifier) + a stem (qualified) (II.1.57), (vii) *pūrva* etc. + a stem (II.1.58), (viii) X-*Kta* + (neg.) X-*Kta* (II.1.60), (ix) combinations enumerated in (II.1.59, 61–72).

(b) The types of combination of stems not in case in apposition are: (i) a stem with accusative force + a stem described in (II.1.24–29), (ii) a stem with instrumental force + a stem described in (II.1.30–35), (iii) a stem with dative force + a stem described in (II.1.36), (iv) a stem with ablative force + a stem described in (II.1.37–39), (v) a stem with locative force + a stem described in (II.1.40–51), (vi) a stem described in (II.2.1–5) + a stem with possessive force, (vii) *naÑ* (= negative) + a stem (II.2.6), (viii) *īṣat* (= slight) + a stem (non SBVD formed) (II.2.7), (ix) a stem with possessive force + a stem described in (II.2.8–17), (x) *ku*, *gati* (*pra* etc. described above under class: member) + a stem (II.2.19), (xi) a constituent non-verbal stem + verbal stem + SBVD (as described in II.2.19–22).

III. Descriptive or Possessive Compound *(Bahūvrīhi)*: (i) defined as comprising the combination not covered by above (II.2.23), (ii) more than one stem with inflectional force, to form a qualifier for a different word (II.2.24), (iii) an indeclinable or *āsanna*, *dūra*, *adhika* + a numeral stem (II.2.25), (iv) stem (name of one direction) + stem (name of another direction) the direction in between them (II.2.27), (v) a combination of the repetition of the same stem to serve as substitute for "where this happened by this (stem)" (II.2.27), (vi) *saha* (as *sa*) + a stem as a substitute for "with the . . . (the stem)" (II.2.28).

IV. A Capulative Compound (*dvandva*), defined as combination of two stems with inflectional formed, as a substitution for the two corresponding inflected forms joined by *ca* (= and) in (II.2.29).

In a compound type of combination which is by definition a substitution for more than one component stems joined syntactically by a single stem, there are two components;

(i) the determining constant which is described as the first member in each com-

pound and which in the A. is defined by its nominative case ending (I.2.43) and designated *upasarjana*, and

(ii) the variable which is always denoted in the A. by the instrumental ending.

The order of these two components has been described in II.2.30–38. The number and gender of each type of combination has been described in II.4.1–31. The order is described as:

(i) the determining constant is placed first (II.2.30) except in the combinations listed under the list *rājadanta* (II.2.31).

(ii) in a copulative compound as both the components are variables, only *ca* (= and) being constant, the order is: (a) the stems ending in *i*, *ī*, *u*, *ū*, except those noted in I.4.3–9 called *ghi*, are placed first (I.2.32), (b) a stem with a vowel as its initial phoneme and *a* as its final is placed first (II.2.33), (c) the stem having lesser syllables amongst the stems under combination is placed first (II.2.36).

(iii) a stem with locative ending and a stem indicating a qualifier in a descriptive compound is placed first (II.3.35) as also a stem ending in *Kta* or *KtavatU* (II.3.36) except in the case of the first *āhitāgni*, etc. (II.3.37).

(iv) stems listed under the list *kaḍāra* etc., are placed first in an adjectival compound *(karmadhāraya)*.

The number of these combinations has been described as follows:

(a) fixed in one number, singular: (i) a numeral determinative compound is (II.4.1), (ii) a copulative of words specified in II.4.2–16 under their specific range of reference with exceptions.

(b) fixed in one gender: (i) a compound form of the above types fixed in the singular (II.4.17), (ii) an adverbial compound (II.4.18), (iii) a nonnegational + non-adjectival determinative compound (II.4.19) combined of the components described in II.4.20–25, (iv) *a* + *pathin* (II.4.30).

(c) gender according to the last member: (i) copulative and determinative (the rest from above) II.4.26, except as follows.

(d) gender according to the first in: (i) *aśva* + *vaḍavā* (II.4.27), (ii) *hemanta* + *śiśira* (II.4.28) (in Vedic language alone), *ahan* + *rātri*,

(e) gender fixed as masculine: a stem + *rātri*, *ahna* or *aha* (II.4.29),

(f) gender freely varying between masculine and feminine in the combination listed under the list *ardharca* (II.4.31).

The compound stem formative suffixes after the constituents have been described in V.4.68–160.

The accent shift in a compound combination has been described in VI.1.223–VI.2.199. The non-zero representation of the inflectional ending of the first constituent has been described in VI.3.1–33. The masculinization of the constituent stem has been described in VI.3.34–42. The alternation of the constituent stems has been described in VI.3.43–139.

3.1.2.3. A rule combined with (*na vā* = or not) is called option *(vibhāṣā)* (I.1.44).

A stem derived by a combination of a stem + suffix is defined in terms of an *aṅga*

(that after which a suffix is combined) defined in I.1.13 + a suffix. The importance of this definition lies

(i) in the successive operation of immediate constituents, e.g., in a combination like *siṣādhayiṣita*, the first break will be *siṣādhayiṣ* + *Kta*, so that *siṣādhayiṣ* is the immediate constituent for *Kta*; *siṣādhayiṣ* is then split as *sādh* + *saN* and here *sādh* is the immediate constituent for *saN*;

(ii) in the successive allomorphy of the constituent (described in VI.4.1–VIII.4.97), e.g., *rañj* + *GHañ* > *rag* + *GHañ* > *rāga*, so that *rāga* + *'ṬH'aK* will yield *rāgika* and not *rāñjika*.

(iii) in the operation of sandhi (VIII.2.27, VIII.3.78) a stem derived by a reduplication of the stem is a combination of a reduplication + stem, this combination is defined as reduplicated *(abhyasta)* VI.1.5.

So the concept of an *aṅga* (immediate constituent) is dependent on its being in combination with a suffix potentially representing a syntactical relationship possible, and is different from that of a stem or a determiner constant in a compound.

3.1.2.4. Combination of functions of classifiers of morphophonemes and phonemes is defined by the different classifiers placed before or after a suffix, so that each represents a bunch of representations, e.g.

KyaP is composed of *K*, *ya* + *P*;

K represents no alternation of the stem preceding it (I.1.5);

ya represents *ya*;

P represents grave accent on *ya* (III.1.4) and *t* before *ya* (VI.1.70) after a short vowel ending stem, so that *i* + *KyaP* > *itya* with accent on *i*.

The combinations have been arranged in such a way that there is no mutual conflict of functions, as every classifier has a definite function under definite circumstances; and though nowhere explicit in this respect, Pāṇini, because of having assigned only specific functions to a classifier, does not allow a combination of non-specific functions, wherever it is in clash with the former; e.g., in the instance quoted above, *K* also represents by elimination an acute accent on *ya*, but this function is non-specific and is in clash with the specific function of *P*, so it cannot be combined with that of *P*.

3.1.2.5. The phonemic combinations defined by Pāṇini are:

(i) cluster of consecutive consonants (unintercepted by anything else) called *saṃyoga* (I.1.7).

(ii) (a) combination of syllables determined by their peak vowels, so as to define utterances as *monosyllabic (ekāC)*, *disyllabic (dvyaC)*, *trisyllabic (tryaC)*, *polysyllabic (bahvaC, anekāC)*, already described under the *Śiva sūtra pratyāhāra*, (b) combination of phonemes *(a-L)*, monophonemic (*ekāL*, I.2.41) or *polyphonemic* (*anekāL* I.1.55) = *apṛkta*.

(iii) combination of two contiguous phonemes (non-divided by pause) *saṃhitā* as defined in II.1.109, this combination works in the following order (((((stem) + derivational suffix) + inflectional suffix) + ... another inflected word) + sentence

pause), as is implicit from his order of rules, for he has appropriately placed the primary derivational suffixes before the secondary derivational ones and compound stem forming suffixes at the end. He has first given the internal sandhi rules and then external sandhi rules.

(iv) the final segment *(ṭi)* defined as combination of phonemes starting with the last vowel of an element (I.1.64).

3.1.3. Eme:allo.

3.1.3.0. Pāṇini has analyzed certain concepts either to express the syntactic relationship between two related meaningful units or to give a substitution model for a series of possible representations. Under the first category we have the concepts

(i) of active *(kartṛ)* vs. passive *(bhāvakarma)*;

(ii) of agent *(kartṛ)*, goal *(karma)* instrument *(karaṇa)* indirect goal *(saṁpradāna)*, ablation *(apādāna)*, location *(adhikaraṇa)*;

(iii) of non-verbal relationship: (a) appositional (*samānādhikaraṇa*), or (b) non-appositional, which can be possessive, partitive or some other type;

(iv) of temporal and aspectual relationship, such as past (*bhūta*), present (*vartamāna*) and future (*bhaviṣyat*) and injunction (*vidhi*), benediction (*āśiṣ*) etc.;

(v) of qualifier vs. qualified, terms in comparison, *(viśeṣya, viśeṣaṇa) (upamāna, upamita)*;

(vi) of types of sentences like interrogation *(praśna)*, reply to a question *(pṛṣṭapratīvacana)*, derogatory statement *(kutsana)*, respect *(pūjā)*, command *(anujñaiṣaṇā)*, ridicule *(prahāsa)*, address *(āmantrita)*, reply greeting *(pratyabhivāda)* etc.;

(vii) of person, number and gender.

Under the second we have the concepts expressed under the compound representation or representation by adding a suffix to a stem, e.g.

strīṣu adhikṛtya > *adhistri*

abhāvo makṣikāṇāṃ > *nirmakṣikaṃ*

by making *adhi* and *nir* as substitutions for *adhikṛtya* and *abhāva* (II.1.6), or *vedaṃ adhīte vedaṃ veda* (studies Veda and understands Veda)

> Veda + *'ṬHak'*

> *Vaidikaḥ* (IV.2.59–60)

'ṬH'ak representing *adhīte* and *veda.*

Under the first we have general concepts, while under the second we have specific ones, which have a limited range of representation. Sometimes there is even an empty supramorphemic concept, which may be represented by a suffixation, e.g. *KaN*,

rāma eva > *ramakaḥ*

These various concepts are represented in the A. by suffixation (inflectional or derivational), and this is quite sound for an inflectional language like Sanskrit. The same concept can be represented by more than one type of suffixation, so that

(i) *sa Vāsudevam bhajati* (*bhaj* + *ti* SBVI)

(ii) *sa Vāsudevasya bhaktaḥ* (*bhaj* + *ta* SBVD)

(iii) *sa Vāsudevabhaktaḥ* (compound, determinative)

(iv) *sa Vāsudevakaḥ* (*Vasudeva* + *aka* SBD)

Of these four sentences, the first two are representations of active, agent and *present tense* concepts, the third is a representation of the non-verbal relationship between *Vāsudeva* and *bhakta*, and the fourth is representation of *bhaj* (to be a devotee of) as well as of the agent and the present tense.

3.1.3.1. Pāṇini has analyzed the compounds and the different types of suffixation under the headings of these various concepts. The abstract forms of suffixes are diversifications of the bunches of concepts, and therefore the same suffix form can represent more than one concept under different situations, and vice-versa. The abstract shape of the suffix sometimes determines its membership of its external distribution class, and most often its representation at the lower stratum, e.g. '*YU*'

> *ana*

> *ana, aṇa*

as well as the representation of the stem preceding it in terms of the stem-vowel alternation or consonant alternation, e.g.,

GHaÑ (SBVD)

> *GHa* with stem vowel lengthened *(Ñ)*

> *a* with stem vowel lengthened and a consonant of the class *c ch j jh ñ* replaced by a consonant of the velar class *(GH)*

> *a* with do- do- do- (*GH* and *Ñ* both)

The terms sememe, semomorpheme, morpheme, morphophoneme and phoneme used at the five strata by S. Lamb,[4] could correspond to the stratification of Pāṇini, with the only modification that the classifier *(it)* in Pāṇini is more than a morphophoneme, as much as it also takes care of the external distribution-class of the suffix classified by it and different from it. As it is never represented by itself, it is represented by morphophonemes like *guṇa* (strong vowel) and *vṛddhi* (lengthened vowel), which in turn are represented by the specific phonemes. Moreover, the technique of Pāṇini is always to set up one suffix to represent one particular concept, and sometimes more

[4] S. M. Lamb, "The strata of linguistic structure" (paper, privately communicated), p. 4: "The items of each structural stratum are defined in terms of their representation on the next lower stratum, in such a way that all the material on the next lower stratum is accounted for, as follows:

items, combinations of items, or zero.

The items of each structural stratum occur in characteristic patterns of arrangement, which are describeable by means of (a) a list of distribution classes of unit items, with the membership of each, and (b) a list of constructions. A construction is described by specification of (a) the distribution class membership of the constitutes.

The simplest grammar of a language is that which has the fewest constructions and the fewest statements of representation.

Principal linguistic units

Stratum	*units*
Sememic	sememe
Morphemic	morpheme
Morphophonemic	morphophoneme
Phonemic	Phoneme."

than one, if they are regularly contrastive, and then to set up a set of others as exceptions (or alternants under specific environments) with the result that the same suffix may be the general suffix under one heading, and an alternant under the other. The principle of complementary distribution[5] would set up the exceptions as alternants, but Pāṇini rightly delimits the scope of this principle. According to his system the alternant will correspond to the *ādeśa* (substitution), which may be complete or partial. Complete substitution has been dealt with in II.4, and partial in VI.4 to VII.4. Some residue-substitution has been dealt with in VIII.2–4. The substitution is actually representation by some element at the next lower stratum, so that a zero suffix substitution at the morphemic stratum is of four kinds, *LOPA*, *LUK*, *ŚLU* and *LUP*. *K*, *Ś* and *P* are represented by different phonemic entities at the lower stratum. The representation of each of these classifiers at the phonemic level is charted below (leaving aside the representation of the classifiers of the stems, which has already been described). The other functions of the classifiers, viz., the determination of external distribution class or position, protection of the preceding consonant (when it is a final vowel classifier) and differentiation from a similar stem, have been described at the proper place.

-U, Ū, Ṛ, -Ṝ, -Ḷ	(1) a non-verbal stem formed by this class has *nuM* before strong case ending (VII.1.70) (2) a feminine *-ī, -ū* stem formed by this class has optional short vowel alternation before *gha, rūpa, kalpa* etc. (SBD) VI.3.45
K- of (SBV) has its membership extended to	(i) Before a *K* Class representation (1) retraction of vowel gradation called for by I.1.3 (I.1.5) (2) *jagdh* ~ *ad* before it (II.4.36) (when it belongs to non-full stem class)
-K (1) *LIṬ* after a non-conjunct consonant (1.2.5) (2) — after *indh, bhū* (I.2.6) (3) *Ktvā* after m*ṛḍ* etc., (I.2.7) and *rud* etc., (I.2.8) (4) *saN* after *rud* etc. after *i-K* (I.2.9) (5) a suffix with initial stop or fricative after *i-K*	(3) reduced grade of stem vowel of *grah* etc. (VI.1.16) (4) *-v* ~ *-y* (of *vay*) before *it* (VI.1.39) (5) *-yUṬ* aug. of *dīṄ* before it (if the suffix begins with a vowel (VI.4.63) (6) zero ~ *a* (of the stem) (VI.4.64) (7) *-i* ~ vowel (of *da dha*) (VI.4.66) if the suffix begins with a consonant (8) zero ~ penultimate vowel of *gam* etc., if

[5] "Two elements are said to be in complementary distribution if each occurs in certain environments in which the other never occurs – that is, if these are no environments in both occur. For the present this means environments definable in terms of certain phonemes, types of phonemes, or combinations of phonemes. Complementary distribution is one of the basic concepts of linguistic theory and method, and will recur repeatedly in various contexts in this book and all linguistic literature" (H. A. Gleason, Jr., *An Introduction to Descriptive Linguistics*, p. 80).

(6) both (4) and (5) after *i-K* followed by a single consonant (I.2.10)
(7) *LIṄ* after — — and *siC* (I.2.11)
(8) — after *-r* (I.2.12)
(9) — optionally after *gam* (I.2.13)
(10) *siC* after *han* (I.2.14)
(11) — after *yam* (= indicate) (I.2.15)
(12) — optionally after *yam* (= marry) (I.2.16)
(13) — after *sthā* and *dā, dhā* (I.2.17)
(14) *yāSUṬ* (III.4.104)

and its membership withdrawn from

(1) *Ktvā, Kta, KtavatU* and *saN* under circumstances described in I.2.18–26

-K, -K (of SBV Class)

the suffix begins with a vowel and is of non-full stem class (VI.4.98–100)
(9) long vowel ~ short penultimate vowel of a nasal ending stem if the suffix begins with a consonant (VI.4.15)
(10) zero ~ nasal (of the stem) if the suffix begins with a consonant (VI.4.37)
(11) no *iṬ* after *śri* and stem ending in *u-K* (VII.2.11)
(12) *ayAṄ* ~ final vowel of *śIṄ* (VII.4.22) if the suffix begins with *y*
(13) short ~ long vowel (of *ūh*) — (VII.4.23)
(14) — (of *iṆ*) — (VII.4.24)
(15) long ~ short vowel (of stem) — and the suffix is neither of full stem forming class nor SBVD → B class (VII.4.25)
(16) *i* ~ final phoneme of (*dy* etc.) if the suffix begins with *t* (VII.4.40–41)
(17) *hi* ~ *dha* — (VII.4.42–45)
(18) *dad* ~ *dā* — (VII.4.46)
(19) — — if the stem is prededed by a preverb (VII.4.47)
(20) *ī* ~ *i* (of *iṆ*) if the suffix belongs to *LIṬ* group (VII.4.69)
(ii) Not before a *K* class
aM aug. of *sṛj* etc., if the suffix begins with a stop or fricative and of stems (VI.1.58) described in VI.1.59
(iii) A secondary system not formed by *K* class has long ~ short vowel (if reduplication) before *yaṄ* and zero ~*yaṄ* (VII.4.83)

-K (of SBD)

(1) acute accent on the final syllable of the suffix of this class (VI.1.165)
(2) before a suffix of this class lengthened grade ~ *i* . . . *ḷ* (of the first syllable of the stem) and *ā* ~ *a* (VII.2.118 read with VII. 2.115–117) with exceptions and additions noted in VII.3.1–31

KH- (SBVD only)

before a suffix of this class
(1) short ~ long (final vowel of declinable stem) (VII.3.66)

	(2) *nUM* aug. of stems ending in a vowel and *arus* + *dviṣat* (VII.3.67)
	(3) *aM* aug. of stems ending in *i-C* (VII.3.68)
GH- (SBVD only)	before a suffix of this class *k* . . . ~ c . . . with exceptions noted in VII.3.60–62 (VII.3.52)
Ṅ- + *-Ṅ* (of all the classes)	(1) retraction of vowel gradation of stem (I.1.5)
(i) of (SBV class)	(1) reduced grade of vowel of grah etc. (VI.1.16)
inclusive of *-Ñ*, *-Ṇ* after *gā kuṭ* etc.	(2) long ~ short vowel (of stem) (VI.4.15)
and of *iṭ* augmenting suffixes and	(3) the same as (5) under *-K(i)* above
of non-full stem class excluding *-P*	(4) the same as (6) under *-K(i)* above
(I.2.1–4)	(5) the same as (7) — —
	(6) the same as (8) — —
	of a suffix of this class
	(7) *iy* ~ *ā* if the suffix is of the full stem class (VII.2.81)
of (SBVI class)	(1) zero *-s* (of I person suffix of *Ṅ* class)
members *LAṄ*	(III.4.99)
LIṄ	(2) zero *-i* (of suffix of this class) (III.4.100)
LUṄ	(3) *tām, tam, ta, am* ~ *tas, thas, tha miP* (of
LṚṄ	suffix of this class) (III.4.101)
	(4) *sīyUT* aug. of the suffix (of *LIṄ*) (III.4. 102)
	(5) *yāsUṬ* aug. of the suffix (of *LIṄ*) (III.4. (III.4.103)
C general	(1) acute accent on the last syllable of the suffix (VI.1.163)
(a) of SBD class only	(2) — — (VI.1.164) (so that *C*. . . *Ñ* class is included in it and *-Ñ* class accent does not operate on *C*. . . *Ñ* class)
Ñ general	Before this class
	(1) acute accent on the first syllable of the stem (VI.1.197)
(a) *Ñ* (of SBVD)	(2) lengthened vowel grade ~ stem final and penultimate vowel *a* (VII.2.115–116)
	(3) *t* ~ *n* (*of han*) (VII.3.32)
	(4) *yUK* augment of *ā* of stem (VII.3.33)
	(5) retraction of lengthened grade and acute accent of *-m* stem (listed as accented) (VII.3.34) and of *jan vadh* (VII.3.35)
(b) *Ñ* (of SBD class)	(6) lengthened grade ~ vowel (the first syl-

	lable of stem) (VII.2.117 read with VII.3. 1–31)
	(7) zero ~ family name forming suffix *aṆ* and *iÑ* (VI.4.58)
Ṭ (of SBVI)	of a suffix of this class (1) *a* ~ last segment (of active ending of this class) (III.4.79) (2) *se* ~ *thās* (of — — . . .) (III.4.80)
Ḍ	Before a suffix of this class (1) zero ~ *ṭi* (of *viṃśati*) (VI.4.142) (2) zero ~ last segment (of stem) (VI.4.143)
Ṇ (of non SBD class)	Before a suffix of this class (1) the same as (2) of *Ñ* above (2)-(5) the same as (3-5) of *Ñ* above
(of SBD class)	(6)-(7) the same as (6-7) of *Ñ* above
T	Circumflex accent on the suffix of this class (VI.1.185)
N (general)	Before a suffix of this class (1) Acute accent on the first syllable of the stem (VI.1.197)
(a) (of SBVD class → B)	(2) Retraction of accent-shift on the immediately preceding preverb (*gati*) (VI.2.50)
P (general)	(1) grave accent on the suffix (III.1.4)
(a) (of SBVD → B)	(2) *tUK* aug. of short vowel of stem before a suffix of this class (VI.1.71)
(b) (of SBVI)	(3) acute accent on the syllable (of stems *bhī* etc.) preceding a suffix which also belongs to full stem class) (VI.1.192)
	(4) retraction of strong vowel grade (of reduplication of *bhū, su* before a suffix beginning with a vowel and belonging to full stem class (VII.3.87–88)
	(5) lengthened grade *u* (final) before a suffix
This class does not include *hi-siP* (*LOṬ*) (III.4.87)	of full stem class (VII.3.89–91) (6) *iM* augment of *tṛṇah* — — (VII.3.92) (7) *iṬ* of *brū* — — (VII.3.93)
-R	Acute accent on the penultimate vowel of the stem preceding a suffix of this class (VI.1.217)
-L	Acute accent on the immediately preceding

	syllable of the stem preceding it (VI.1.193) with the exception in case of *ṆamUL*
-Ś or *Ś-* (of SBV class)	(i) Before a suffix of this class (1) *nUM* augment of *muc* etc. (VII.1.59) (2) long ~ short vowel (of *ṣṭhīvU, klamI, cam*) and (of *kram*, active) (VII.3.75-VII.3.76) (3) ch ~ last consonant of (*iṣ gam yam*) (VII.3.77) (4) *pib* etc. ~ *pā* etc. (VII.3.78) (5) *jā* ~ *jñā* (VII.3.79) (6) short vowel ~ long vowel (of *pū* etc.) (VII.3.80) (7) — (of *nū*) (VII.3.81) (8) strong grade vowel ~ vowel of *(mid)* (VII.3.82) (ii) Before a suffix which does not belong to this class (1) *ā* ~ *e* (final of a stem) (VI.1.45)

3.1.3.2. Units represented as phonemic entities are:

(1) *vṛddhi* (*vL*, lengthened grade of vowel) represented by:

ā (followed by *r*)	for *ṛ, ṝ*, (I,1.1, read with I.1.3 and I.1.51)
ai	for *i, ī* (I.1.1 read with I.1.3)
au	for *u, ū* (I.1.1, read with I.1.3).

(2) *guṇa* (*vF*, strong grade) represented by:

a (followed by *r*)	for *ṛ, ṝ* (I.1.2 read with I.1.3 and I.1.51)
e	for *i, ī* (I.1.2 read with I.1.3)
u	for *u, ū* (I.1.2 read with I.1.3).

(3) *samprasāraṇa* (*vZ*, zero grade) represented by:

i	for *y*	(I.1.45)
u	for *v*	
ṛ	for *r*	
ḷ	for *l*	

(4) *a-Ṇ*$_2$ (vowels + semivowels in the *Śiva sūtra Pratyāhāra*), for the different contrastive quantities and qualities of each.

(5) *T* for delimitation of the quantity to one indicated by the vowel preceding it (I.1.69).

(6) *savarṇa* (correlated or homorganic phoneme in point and mode of articulation of the class vowels, semivowels, nasals, *ḥ*, *a-Ṭ*) represented by any of the correlated members as specified above (I.1.9 read with I.1.10).

(7) *pragṛhya* (hiatused) defined in terms of listing in I.1.11, I.1.19 represented by juncture (*prakṛtibhāva*) (VI.1.125).

(8) a short vowel representation of *e*, *o* is *i*, *u* (I.1.48)

(9) lopa (zero) represented by disappearance of itself (I.1.60) having 4 subtypes defined earlier (I.1.61).

3.1.3.3. Phonemic units represented as phonetic entities are:

(1) vowel quantity:
  (1) short *(hrasva)*;
  (2) long *(dīrgha)*;
  (3) supra long *(pluta)*;

  } defined by the 3 contrastive measures of mora (as analogically perceived in the crowing of a cock) (I.2.28 read with I.2.29).

(2) syllabic quality of a vowel:
  (1) Light *(laghu)* (a short vowel) I.4.10;
  (2) Heavy *(guru)* (a short vowel before a consonant not followed by a vowel) (a long vowel) (I.4.11–12);

(3) Vowel accent:
  (i) Acute *(udātta)* represented by high pitch referred to in the present study as accented in juxtaposition with grave *(anudātta)* termed unaccented I.2.29;
  (ii) grave *(anudātta)* represented by low pitch is called graver *(sannatara)* represented by lower pitch before acute and circumflex;
  (iii) circumflex *(svarita)* represented by a combination of high and low, starting with high (I.2.31–32);
  (iv) monotone *(ekaśruti)* by levelling of pitch to one in situations like: (a) calling from distance (I.2.33), (b) particular sacrificial situations enumerated in I.2.34–36, 39;

(4) reduplication *(abhyāsa)* represented by the
  (i) the first phoneme of a monosyllabic consonant initialled stem;
  (ii) the second phoneme of a monosyllabic vowel initialled verbal stem (except *n*, *d*, *r*) (VI.1.–4);

(5) repetition *(āmreḍita)* represented by the full stem with the grave accent, repeated after itself (with its usual accent) (VIII.1.1–3);

(6) nasalization of vowel *(anunāsika)* represented by a twang (I.4.110, I.1.8);

(7) sentence pause *(avasāna)* represented by complete pause of utterance.

3.1.4. As regards definition in terms of functional relationship, a part of it has been already discussed above under the various heads. Syntactic relationship will be discussed in detail in the following chapter. The positional definition of constituents in a compound has already been discussed. Only the positional definition of preverbs, suffixes and classifiers is charted below:

(i) a preverb (dependent or independent, *upasarga* or *gati*) is defined as a unit immediately preceding a verbal stem (I.4.59 read with I.4.80 and 82), with the exceptions that in the Vedic language they are intercepted too (I.4.81);

(ii) a suffix except specified below is defined by its position after the stem (III.1.2);

(iii) (a) a suffix, or an augment or substitution of a suffix of the class $\mathcal{T}$ is placed before its constituent (e.g. $a\mathcal{T}$ of the past tense conjugational suffixes), (b) the same of

the class *K* is placed after its constituent (I.1.46), (c) the same of the class *M* is placed after the last vowel of the constituent (I.1.47);

(iv) a reduplication is placed before the stem (VI.1.6) *(ābhyāsa)*;

(v) a repetition is placed after the word (VIII.1.2) *(āmreḍita)*;

(vi) a penultimate *(upadhā)* has a position as the last but one phoneme of an element (I.1.65).

3.1.5. To conclude, the definitions of terms given by Pāṇini are:

(i) structural; in as much as they are not dependent on anything outside the scope of his structure of description or his corpus, he has been very careful in avoiding to assign a non-structural meaning to any of the terms, a fact well-borne by his specific dicta:

(a) a form used in the description stands for itself and not for its synonym, unless it is a term used in the description to represent some grammatical entity; (I.1.68),

(b) gender and number of proper nouns after which a derivational suffix is represented as zero, is not to be described, as it is not dependent on any linguistic criteria (I.2.53),

(c) so also, the description of constituents in terms of nuclear *(pradhāna)* or non-nuclear, or the separate meaning of a suffix, is irrelevant for a linguistic description, as the validity for such a description lies outside the discipline of language (a linguistic discipline by implication restricted to determine and analyze the elements and establish their relationship only) (I.2.56),

(d) temporal concept in terms of actual time cannot be a criteria of description of tenses, nor the reference to meaning in classifying the compounds can be a valid criteria (I.2.57);

(ii) binary,[6] as far as possible, in as much as he has tried to define one class by enumeration and the other by elimination *(pāriśeṣya* or *śeṣa)*, and arranged the rules in such an order that the form generated by the preceding rule has to undergo the operation of the succeeding rule (if it applies to it), till the final utterance is generated as a sentence;

(iii) precisely distinctive and unambiguous, in as much as is explicitly or implicitly further defined by rules of application;

and therefore

(iv) nearest to a mathematical model of description.

[6] "All valid criteria for determining immediate contituents can be deduced from the basic definitions. And most of the criteria which have been put forth by various linguists in recent years are valid in this sense. On the other hand, two principles are worthy of note as having been mentioned at one time or another without being valid. One of these is that constructions should always be binary or that they should always be binary except in the case of coordinate constructions having more than two members. The other applicable only if items smaller than words, such as lexemes, are taken as the basis of the description is that words must always be constituents" (Sydney M. Lamb, *On the mechanization of syntactic analysis*, p. 8).

3.2. RULES OF APPLICATION (PARIBHĀṢĀ)

3.2.0. Rules of application in Pāṇini have a four-fold purpose:

(i) to relate the definition rule to the main description rule as also one description rule with the other;

(ii) to delimit the scope of a designation *(sañjñā)* or a rule;

(iii) to assign precise mathematical significance to the notational symbols and terms used together with their inflectional endings;

(iv) to ordain the successive order of operation and determine the relative force of more than one conflicting rule;

(v) to serve as a "metatheorem" or "methatheory" in logical terms.[7]

These rules are in consonance with the oral nature of transmission of the grammar, so that limitations imposed are in oral rather than written terms, e.g., the jurisdiction of a heading of description is determined by a circumflex accent boundary (though it is not explicit as to which syllable of the wordings of the other heading-rule has to bear the circumflex accent, it is fairly reasonable to presume the accent on the first syllable of the wordings of a heading-rule), or the nasalized vowel is assigned the property of a classifier (I.3.2) (to distinguish it from the non-nasalized one), but the recording system did not preserve this nasalization. These rules also presuppose natural blocks of rules (in their spoken form) which unfortunately were not marked in the recorded tradition. It is, however, not impossible to reconstruct these blocks, if the structural relationship has clearly been understood.

The corpus before Pāṇini belonged to a language rich in its heritage of diversity of usage, colloquial, literary and technical – which corpus neither his commentators nor we can perceive, so that it is not possible to pass a judgment on his achievement in terms of a particular concrete corpus. We can only infer, from the minute details that he has given, his extreme care in taking care of each and every diversity of the language under analysis. This presented a great difficulty for the commentators, who had to explain the generation of a particular form not covered by any of the rules of the A., through additional rules of application. The validity of all such additional ules of a pplication for the corpus before Pāṇini is therefore questionable, but those of general nature are certainly valuable for better understanding of Pāṇini's A.[8]

[7] "The status of *paribhāṣā* corresponds to the status of a metatheorem in modern logic" (J. F. Staal, "The theory of Definition in Indian Logic", *Journal of the American Oriental Society*, Vol. 81, No. 2, 1961, p. 123), read with Stephen Cole Kleene, *Introduction to Metamathematics*, p. 62: "The metatheory belongs to intentive and informal mathematics (unless the metatheory is itself formalized from a metametatheory, which here we leave out of account). The metatheory will be expressed in ordinary language, with mathematical symbols, such as metamathematical variables, introduced according to need. The assertions of the metatheory must be understood. The deductions must carry conviction. They must proceed by intuitive inferences and not as the deductions in the formal theory, by applications of stated rules. Rules have been stated to formalize the object theory, but now we must understand without rules how those rules work. An intuitive mathematics is necessary even to define the formal mathematics."

[8] "After Pāṇini the problem has become to find in each particular case of word formation a *paribhāṣā*

We propose to deal with the rules of application under broad heads:

(a) (i) rules explicit in Pāṇini, and (ii) implicit in Pāṇini by deduction (but not given by his commentators);

(b) rules laid down by his commentators with a view to link the structural frame work of his grammar more cohesively.

3.2.1.

3.2.1.0. *Rules explicit or implicit in Pāṇini.* – The first category of such rules is the set which assigns specific function to case endings:

(i) ablative case ending marks a preceding environment (I.1.67) explicitly (if not a constituent of a phrase, which phrase is immediate constituent of the describing sentence), e.g., in *ā kaḍārād ekā sañjñā* (I.4.1) the form *kaḍārat* is a part of the phrase *ā kaḍārāt* (= as far as *kaḍāra*) implicitly implied);

(ii) genitive marks an element representable by another corresponding element (either at the stratum of suffixation or phonemic realization implicitly implied) (I.1.49). Such a representation is further limited by limitation-rules under the following broad heading (genitive ending of a form, which is a part of the constituent phrase of a describing sentence, does not have this specific function implicitly. Implied genitive also marks the form indicating the dialect or the grammarian school having a variation implied);

(iii) locative marks:

(a) a following environment (explicit in I.1.67)

elsewhere, (b) in a compound verbal suffixation, where it marks the preceding non-verbal stem before the verbal stem *(upapada)* (explicit in III.1.92),

(c) in a situation where terms belonging to two different strata are juxtaposed, where it marks the term of the higher strata (implicit), e.g. *hetau ... pañcamī* (II.3. 23–24) the locative ending in *hetau* marks *hetu* (casual relationship), concept represented by the case ending designated as the fifth (i.e., ablative);

(iv) nominative case ending:

(a) marks explicitly in the description of compound the determiner constant *(upasarjana)* (I.2.43),

(b) marks implicitly the term under definition or the element under description as well as the definition or the qualifier, which is usually placed before unless in a coordinate clause formed by *ca*, *vā* and *na* (= and, or, not);

(v) instrumental case ending in compound type of combination marks implicitly the variable constituent of the particular combination.

3.2.1.1. *Rules of Limitation.*

A. *Limits on representation*

(i) (a) *vF* and *vL* (full and lengthened grade representation) of only *ɨ, ŭ, r̆, ḷ̆ (i-K)*

---

which enables us to manipulate the *Lakṣaṇa* of Pāṇini's *sūtras* in such a way that the result of their application conforms to the *lakṣya*" (J. F. Staal, "The theory of definition in Indian logic", *Journal of the American Oriental Society*, Vol. 81, No. 2, 1961, p. 123).

(I.1.3), except when (b) these members of *i-K* belong to a stem, of which a segment has been represented by zero before a nonfull stem class suffix (I.1.4), or which is followed by a *K or Ṅ* class suffix, (I.1.5), or when (c) they belong to stems *dīdhī* , *vevī* or to *iṭ* (stem- forming augment) (I.1.6);

(ii) *vZ* (zero grade representation) is of *i-K* only (I.1.45);

(iii) any representation *(ādeśa)* is the closest to what it represents at the lower strata (I.1.50);

(iv) a representation of *ṛ* is *r* preceded by *a*, *i* or *u*, (I.1.51);

(v) (a) a representation referring to segment, is of the final phoneme of the segment (I.1.52) and even if representation is polyphonemic *(anekāL)*, but is classified by *-Ṅ*, is for the final phoneme (I.1.53), (b) a representation referred to a segment described as the preceding environment is of the initial phoneme of that segment (I.1.54), but (c) a representation which is polyphonemic and is classified by *Ś* is of the entire segment (I.1.55);

(vi) a non-phonemic representation behaves as if it were the element it represents (I.1.56), but even a phonemic representation behaves similarly if it is of a vowel and is conditioned by the following environment and refers to the preceding segment (I.1.57);

(1) except (a) when it precedes word boundary, or (b) gemination *(dvirvacana)*, or (c) *-vara* (SBVD), or (d) -zero representation of *y*, or (e) -accent representation, or (f) -representation by a correlated phoneme *(savarṇa)*, or (g) -nasal *(anusvāra)*, or (h) -representation by long vowel, or (i) -representation of the phoneme class *j-Ś* (voiced unaspirated stops), or (j) -representation of the phoneme class *c-R* (voiceless unaspirated stops) (I.1.58), but

(2) a representation of vowel does behave like the element it represents if it precedes a vowel, even if it refers to gemination *(dvirvacana)* (I.1.59);

(vii) a representation of the following classifiers is zero (a) a nasal vowel (in the sūtras), (b) a final consonant, except *t*, *th*, *d*, *dh*, *n*, *s*, *m* belonging to an inflectional suffix, (c) initial *ÑI-*, *ṬU-*, *ḌU-*, (d) initial *Ṣ-* belonging to a suffix, (e) initial *C-*, *CH-*, *J-*, *JH*, *Ñ-*, except '*CH*, *JH*, *KH*, *GH*, *Ṭ-*, *ṬH-*, *Ḍ-*, *ḌH-*, *PH*', not represented as zero, (f) initial *L-*, *Ś*, *K*, *KH*, *G*, *GH*, *Ṅ* (of a non SBD suffix) (I.3.9 read with I.3.2–8), (g) '*VI*' of a suffix (monophonemic) (VI.1.67), (h) a monophonemic alternation of *sU*, *ti*, and *si* (VI.1.68);

(viii) a representation referred to as a series of another series is in respective order of the series (I.3.10);

(ix) a SBD *(taddhita)* representation of a syntactical relationship expressed by a model sentence in the present indicative III Person Singular *(LAṬ)* is after the first (meaningful) unit in that sentence (IV.1.82);

(x) a *vZ* representation does not occur before a *vZ* (zerograde) vowel (VI.1.37);

(xi) a representation of the initial *Ṣ-*, *Ṇ-* of a verbal stem is respectively *s-*, and *n* (VI.1.64–65);

(xii) a representation of

'*YU*'	(of both SBD and SBVD	is	*ana*	(VII.1.1)
'*VU*'	— —	is	*aka*	(VII.1.2)
'*PH*'	(of SBD only)	is	*āyan*	(VII.1.2)
'*ḌH*'	—	is	*ey*	(VII.1.2)
'*KH*'	—	is	*īn*	(VII.1.2)
'*CH*'	—	is	*īy*	(VII.1.2)
'*JH*'	(of SBVI)	is	*ant*	(VII.1.3)
		and	*at*	(VII.1.4–5)
'*ṬH*'	(of SBD only)	is	*iK*	(VII.3.50)
		and	*ka*	(VII.3.51)
		after *is*, *us*,		etc.

(B) *Limits on jurisdiction*

(a) A heading has a jurisdiction determined by the circumflex accent after the rules coming under it (II.3.11);

(b) Only one definition can apply to an element (capable of having more than one) defined in I.4.1–II.2.38, so that, when there is a contradiction, the later definition given in the succeeding rules supersedes that given in the preceding one (explicit in I.4.1–2);

(c) The rules falling under the inner cycle (I.1.1–VIII.1.76) do not apply to these falling under the outer cycle (VIII.2.2–VIII.4.68) (explicit in VIII.1.1); but

(d) The rules pertaining to definitions universally applicable and rules of limitation universally applicable, do apply to the outer cycle (implicit);

(e) A morphophonemic rule applies to the classifier, only in so far as it does not make it indistinct (implicit in Pāṇini's usage);

(f) A form standing as a citation or an algebraic designation (Sañjñā) is always a non-verbal stem in masculine singular (implicit in Pāṇini);

(g) A form by definition stands for itself (and not a synonymous different form) unless it itself is a technical term standing for a set of other real forms (I.1.68);

(h) A member of the *a*-$\dot{N}^2$ group (vowel, semivowel and *h*) or of the groups k^U, c^U, $ṭ^U$, t^U, p^U, stands for itself as well as for its homorganic correspondents, but only when it is not a component of a suffix (I.1.69);

(i) An exception-rule loses its force if it is presumed by a preceding general rule (implicit).

3.2.1.2. *Rules of grouping and ordering*

(a) The initial member of a listed group together with the final classifier stands for all the members listed therein (I.1.71); but

(b) The classifier *T* delimits the membership to the particular quantity explicit in the real member preceding it (I.1.72);

(c) A segment stands for the entire group that ends in it (I.1.73), unless explicitly mentioned otherwise;

(d) The position of *K* class is after the element to which it is enjoined, while that of *Ṭ* class is before the element (I.1.46);

(e) The position of *M* class is after the last vowel of the element to which it is enjoined (I.1.47);

(f) When two sets are juxtaposed in a descriptive rule, the application is in the respective order of the corresponding sets (I.3.10);

(g) The position of suffixes is otherwise implicit in the successive order of the A. (implicit);

(h) the position of a component in a compound is laid down in II.2.30–38 (already described under 3.1.2.1);

(i) the position of a preverb is immediately preceding the verb (I.4.80).

3.2.1.3. *Rules which lay down structural emphasis.*

(a) There are two types of Zero, one positive and the other negative. The positive one *(lopa)* does not enjoin disappearance of its function, while the negative one *(LU)* enjoins disappearance of its function so far as it affects the constituent to which it is added (I.1.62–63);

(b) The gender and number of class names can be listed but no disciplined analysis can be given therefore. (I.2.53);

(c) (i) the determination of a nucleus in compound and the assignment of independent meaning to a suffix is beyond the scope of this description in as much as both seek validity in extralinguistic factors (I.2.56),

(ii) for the same reason temporal idea of tense and dependence of a component in a compound is beyond the scope of this linguistic description (I.2.57) (tense by implication is a grammatical category having no necessary co-relation with the concept of time);

(d) The relational concepts are expressed by suffixation, compounding or sentence type, so that wherever there is no such expression, it is represented by inflectional endings (II.3.1);

(e) The relationship is inherent in a substitution by compounding or derivation (II.1.1);

(f) What is termed as neutralization of *sūtras*[9] by Buiskool is actually the maxim well-known in a generative grammar – "a number of linguistic levels of representation are to be built up order from high to low, so constructed that we can generate all utterances by stating the permitted sequences of highest level elements, the constituency of each highest level element in terms of elements of the second level, finally stating the phonemic constituency of elements of the next-to-lowest level."[10]

(g) the principle of *asiddhatva* (exclusion or inoperativeness) mocked at by Buiskool: "In this sense, and under the said reserve, at the end of this first research about the system of the most remarkable part of the A., as far as this is concerned, the

[9] "Of a specific technical means concerning the application of the *sūtras* and finally also amounting to shortening of expression, Pāṇini avails himself in neutralizing certain rules with respect to certain others. As the former have to be conceived as not existing with respect to the latter, part of forms which otherwise, would conform or would not conform to the latter, are secured against (become liable to transitions according to) these rules" (H. E. Buiskool, *The Tripādī*, p. 25: "Introduction").

[10] Noam Chomsky, *Syntactic Structures*, p. 24.

opinion on the most famous *Vyākaraṇa* antiquity prides itself on, can not but run *sarvatraiva siddham* etc.",[11] is in fact not merely a result of an ingenious set development progressions which are interwoven in such a way as to admit of a maximum mnemotechnical effect,[12] but is a careful procedure of singling out rules belonging to an outer cycle (most of which pertain to external sandhi at the phrase and at the sentence level), so that the total number of rules is reduced to the minimum and at the same time a clear dichotomy of operation is shown, generation of individual items as parts of a sentence and generation of the finite sentence as a whole.

3.2.2. Before we propose to deal with the second broad category of application rules (formulated by his commentators), it may not be out of place to make a few observations on the purpose and function of these new rules, which have been framed:

(a) to redefine the limitations of a Pāṇinian rule, in order to make it more succint;

(b) to treat the language described by Pāṇini as the whole human speech ("language"), and not a language which is a self-contained whole and a principle of classification,[13] so that further additions and elaborations are automatically called for as also *nitya* and *anitya* (non-transitory rule and transitory) classification is needed (Rules 42–49);

(c) to take recourse to logical terminology, so that a cause-effect relationship is made inherent between the generating rule and the generated form, with the result that the descriptive emphasis of Pāṇini is affected to a considerable extent (e.g. Rules 3, 15, 17);

(d) to extend the principle of *asiddhatva* (inoperativeness) to the sphere outside the *Tripādī* by dyadic division of *bahiraṅga-antaraṅga* (outer and inner) with respect to the *nimitta*, the element under operation, or of *apavāda-utsarga* (exception and rule) or of two types of option (regular and irregular), e.g. Rules 55–55, 63–65, 108; and

(e) to defend the position of Pāṇini against the assault of his opponents with the help of arguments based on common sense (e.g. Rules 1,133).

These rules are therefore not pertinent to the present study as far as they are neither explicit nor implicit in Pāṇini. As regards the rules deduced form Pāṇini's own usage, their usefulness is only from the angle of reinterpretation of Pāṇini. As such, the relevance of a survey of these rules is only limited to information here.

3.2.3. The rules of application framed by the commentators of Pāṇini have been analysed and collected by Nāgeśa Bhaṭṭa in his *Paribhāṣenduśekhara.*

Kielhorn in his preface to the translation of this work[14] has referred to the fact that there are definitely a large number of rules included in the *Pari.* which either vary slightly from the reading found in the Mbh. (11, 18, 20, 24, 25, 26, 73, 84, 111, 112, 117, 119 Pari.), or which are merely implied from passages in Mbh. (and so not ex-

[11] H. E. Buiskool, *The Tripādī*, p. 161.
[12] *Ibid.*, p. 156.
[13] Ferdinand De Saussure, *A Course in General linguistics*, English translation, p. 9.
[14] F. Keilhorn, *Pari.* "Preface", p. I-II.

TABLE II

Paribhāṣā

Rule number	Validity or invalidity indicated from Pāṇini's rule number	Rule number	Validity or invalidity indicated from Pāṇini's rule number
I	II	I	II
6	I.1.55	68	III.3.169 read with III.1.94 which it supercedes by the force of Rule 68
7	III.4.19		
8	III.1.39	69	III.2.116
9	V.1.22	71	II.1.70
19	VI.4.160 & I.1.69	75	II.2.19
20	VI.1.111 & VI.1.131	78	(rejected by) III.4.59
22	VIII.3.46	79	VI.2.142
25	VI.3.50	80	VI.1.213
27	I.4.14	81–82	IV.2.9
28	VI.2.49	83	V.4.14
31	V.2.87	84	VI.2.193
32	V.2.86–87	86	VI.4.153
34	I.2.63	87	VI.4.172
36	VI.4.59 & VIII.2.46	88	VI.4.174
41	(rejected by) I.3.92	89	VII.1.11
50	VI.4.132 & VI.1.95	91	VII.3.56
51	VI.1.86	92	(rejected by) VI.4.160 & VII.3.79
52	VII.2.98	93	(rejected by) VI.4.146, VIII.4.16,
53	VIII.3.22		III.1.79, VI.1.158, I.1.62, VII.2.12,
54	II.4.36		VII.3.46
55	VI.4.78	109	VII.1.75
56	IV.1.82	119	(rejected by) VI.1.17
66	VII.4.83	120	(rejected by) VII.2.10
67	III.2.146		

plicit therein) (10, 17, 40, 72), or which are contrary to the Mbh. and consequently are void of validity (56, 78, 93, 120, 121). He has categorized these rules under the following heads:[15]

(i) *Jñāpakasiddha* (indicated by usage in Pāṇini's language itself) a *jñāpaka* (indicator), being that which teaches and suggests something and is applicable to any term implied by Pāṇini, or to any rule given by him, or, in short, to any proceeding of his, which would be meaningless or superfluous *(vyartha)*, or for which it would be absolutely impossible to assign a reason if a particular *Paribhāṣā* (rule of application) did not exist but which appears necessary and serves a purpose *(caritārtha)*. Under this category he has enumerated the rules given in Table II.

(ii) *Lokanyāyasiddha* (validated by common sense) under which fall rules 10, 11, 15, 17, 30, 37, 50, 57, 73, 74, 76, 77, 85, 86, 97, 98, 103, 107, 108, 111 and 112. The validity of these rules is to be sought in common sense of propriety of a systematized statement.

(iii) *Yuktisiddha* (validated by a logical argument) under wich fall rules 14, 34,

[15] *Ibid.*, p. V-XVII.

38, 59, 60, 61, 65, 70, 93, 100, 101, 104, 105, 113, 114, 116, 118, 121, ignore three underlying factors of Pāṇini's description, viz.:

(1) the description is one whole and this technique envisages a stringed application which runfrom the first to the last rule,

(2) the usage of Pāṇini for the sake of clarity and unambiguity enjoins a different behaviour of the metalinguistic classifiers in sandhi, which necessitated new rules of application, and

(3) the description pertained to a living speech on a synchronic level and as such did not intend to pin down the growth of the language to his framework, as was understood by his commentators who framed these new rules. Nevertheless, these later *paribhāṣās* reveal a sincere attempt to go deep into the structural unity of the *Aṣṭadhyāyī* and as such are of immense value for a structural evaluation of Pāṇini's work.

(iv) *Vācanikī*, the validity of which can be ascertained by an examination of the individual cases in which it may be applicable; (a) it may be directly deduced from a particular rule of Pāṇini, or (b) may be a completely independent maxim.

Under (a) the following rules can be placed 12 (from I.1.49), 13 (from I.1.50), 21 (from I.1.62) 29 (from I.1.72), 35 (from I.4.9 or III.1.84 or III.1.85), 38 (from I.4.2), 39–40 (from I.4.2),

Under (b) some can be deduced from statements made in the Mbh., e.g., rules 16 (from Mbh. on I.1.72), 24 (from Mbh. on I.1.72), 26 (from Mbh. on VI.1.13), 33 (from Mbh. on I.1.72), 62 (from Mbh. on VII.1.1).

3.2.4. To conclude the technique of Pāṇinian description is an achievement

(1) as it presents a mathematical model of linguistic description in a frame work which is one whole and unless one goes through the entire grammar one can not generate or analyse a communicable unit of utterance, dealing with finite groups of linguistic items which are "discontinuous",[16]

(2) it synthesizes the two important methods of description, the Item and Process of which Tunica Grammar of Mary Hass is an ideal model[17] and the Item and Arrangement, of which Mono Grammar of Sydney Lamb is an ideal;

(3) it is both a generative and an analytical grammar;

(4) it is concise, compact and comprehensive.

[16] Description of language design: "Ordinary mathematical techniques fall mostly into two classes, the continuous (e.g. the infinitesimal calculus) and the discrete or discontinuous (e.g. finite group theory). Now it will turn out that the mathematics called 'linguistics' belongs in the second class. It does not even make any compromise with continuity as statistics does, or infinite group theory. Linguistics is a quantum mechanics in the most extreme sense" (Martin Joos, "Readings in linguistics", p. 350, appeared in the *J. Acoustical Soc. Am.*, 22, 1950, pp. 701-8).

[17] See for detail discussion: Charles F. Hockett, "Two models of grammatical description", *Word*, 10 (1954), pp. 210-34.

CHAPTER 4

THE MAIN BODY OF DESCRIPTION, AND CONCLUSIONS

4.0. THE GENERAL FRAMEWORK OF THE DESCRIPTION

Let us examine first what the ideal aim of descriptive linguistics is, and how far Pāṇini fulfils it. Zellig Harris delimits the scope of this discipline to the description of the regulations in certain features of speech, and he further remarks that those regulations are in the distributional relations among the features of speech in question, i.e., the occurrence of these features are relative to each other within utterances.[1] Einar Haugen is more specific when he lays emphasis on finding internal relational standards but he is at the same time conscious that this can be achieved only when "linguistics becomes circular or mathematical".[2] Noam Chomsky further delimits the scope of descriptive grammar in as much as he wants to make it quite "neutral as between speaker and hearer, between synthesis and analysis of utterances"; and therefore he excludes both the speaker and the hearer.[3] Whorf compares language to the physical world in as much as it consists of *nāma-rūpa*, "emergent from a field of causes that is itself a manifold of pattern and order", and as such lays emphasis on the variability of the structural position in language.[4] During recent years the mechanization has placed demands in terms of more precision, so that a construction has to be described "as a relation: a class of ordered n-ads of forms, where n is always finite, usually, often exactly 2, but never 1. A form built by construction therefore is necessarily composite, that is, an atomic element does not belong to a construction."[5] This has resulted gradually in the principle of independence of meaning,[6] so that linguistics is to become a "calculus", i.e. "an uninterpreted system".[7] Forms are

[1] Zellig S. Harris, *Structural Linguistics*, p. 5.
[2] Einar Haugen, *Readings in Linguistics*, p. 359 (appeared in *Language*, 27, p. 211-22).
[3] Noam Chomsky, *Syntactic Structures*, p. 48.
[4] B. L. Whorf, *Language, Thought and Reality*, edited by John B. Carrol (1941), p. 269.
[5] C. F. Hockett, *Proceedings of Symposia in Applied Mathematics*, edited by Roman Jakobson, Vol. XII, p. 228.
[6] Noam Chomsky, *Syntactic Structures*, p. 17: "Despite the undeniable interest and importance of semantic and statistical studies of language, they appear to have no direct relevance to the problem of determining or characterizing the set of grammatical utterances. I think that we are forced to conclude that grammar is autonomous and independent of meaning, and that probabilistic models give no particular insight into some of the basic problems of syntactic structures."
[7] Joseph H. Greenberg, *Essays in Linguistics*, Chapter I, p. 2.

therefore required to be explained in terms of their contexts rather than their meaning, though each one of them conveys a definite meaning itself. Therefore "a set theoretical concept of model" as suggested by Suppes is "a useful tool for bringing formal order into the theory of experimental design and analysis of data".[8]

Pāṇini intuitionally, without the modern equipment of mathematical modelling, evolved a system of description which (1) is independent of consideration of meaning as a factor in description of forms, (2) is based on sets and subsets as explained in the earlier chapter, and (3) is binary. The requirements[9] of a model as suggested by Hockett are met with to a great extent in Pāṇini's grammar. The charges of perversity[10] are left behind if one looks at the structure of Pāṇini's grammar as a whole, and one is gratified to see that the tables have turned against the 19th-century notions of the Whitney school, and the lead taken by Bloomfield[11] "has inspired linguists to enquire into the ingenuity of Pāṇini's method". Whorf rightly remarks that "modern scientific linguistics dates from the rediscovery of Pāṇini by the Western world as the earliest form of the science anticipated its most recent one".[12]

4.1. SENTENCE ACCORDING TO PĀṆINI

Now we proceed to examine the description in the light of the various methods

[8] Patric Suppes, *A comparison of the meaning and uses of Models in Mathematics and Empirical Science*, p. 20.

[9] Charles F. Hockett, *Readings in Linguistics*, p. 398 (also appeared in *Word*, 10, 1954, p. 210-31): "(1) A model must be general: it must be applicable to any language, not just to languages of certain types.

(2) A model must be specific: When applied to a given language, the results must be determined wholly by the nature of the model and the nature of the language, not at all by whom of analyst. It is not lack of specificity if the model requires us to subsume certain facts more than once, from different angles; it would be a lack of specificity if the model *allowed* us to take our choice in such cases, instead of *forcing* one choice or other or their joint option.

(3) A model must be inclusive: when applied to a given language, the results must cover all the observed data and, by implication, at least a very high percentage of all the not yet observed data. This is the analog of the 'guide book' criterion (not metacriterion) mentioned earlier.

(4) A model must be productive: when applied to a given language, the results must make possible the creation of an indefinite number of valid new utterances. This is the analog of the 'prescriptive' criterion of descriptions.

(5) A model must be *efficient*: its application to any given language should achieve the necessary results with a minimum of machinery."

[10] W. Dwight Whitney, *Sanskrit Grammar*, p. xv: "Introduction": "The time must soon come, or it has come already, when endeavor shall be instead to explain the grammar for the language to list in all details, so far as shall be found possible, the reason of Pāṇini's rules (which contains not a little that seems problematical or even some times perverse); to determine what and how much genuine usage he had everywhere as foundation, and what traces may be left in the literature of usages possessing an inherently authorized character, though unratified by him."

[11] Leonard Bloomfield, *Language* (1958), p. 11: "This grammar, which dates from somewhere round 350 to 250 B.C., is one of the greatest monuments of human intelligence. It describes, with the minutest detail, every inflection, derivation, and composition, and every syntactic usage of its authors' speech. No other language, to this day, has been so perfectly described."

[12] B. L. Whorf, *Language, Thought and Reality*, edited by John B. Carrol (1940), p. 232.

prevalent in modern linguistics. The starting-point in the earlier phase of modern linguistics was phonemics,[13] but in the later phase it is the sentence (as also is the case in the Sanskrit grammatical tradition as attested by Bhartṛhari and his commentator Puṇyaraja,[14] both Pāṇini and Patañjali belonged to the *Vākyavadin* school in as much as neither the sound units nor the words have any separate existence apart from the sentence[15]) which is the starting as well as the ultimate point in description, as is also the case with the grammar of Pāṇini.

4.1.0. Pāṇini did not explicitly define the term *Vākya* (sentence) but he has through the devices of

(1) marking sentence boundary (avasāna = final pause) in I.4.110;

(2) describing sandhi between one pada (word) and the other in VIII.1.16–74 there by implicitly implying that this sandhi operates in order to give the ultimate sentence accent patterns;

(3) making a finite verb form *(tiṄ)* as a marker for a clause and describing the types of clauses in terms of the various differentiating connectives;

(4) describing the boundary of specific sentence-types in VIII.2.82–108 in terms of the quantity and pitch of the sentence final vowel;

(5) describing the sandhi operation of the word final *(Padānta)* and sentence final in VIII.4 in terms of phonemic alternation,

(6) describing the entire grammar in terms of substitution at lower level of the various syntactic concepts which are supra-morphemic and are close to "sememes".

This is close to the definition of a sentence given by Elson and Pickett: "Again using Bloomfield's formulation as a basis, we define sentence as: a unit which usually contains intonational or junctural morphemes indicating closure, and which frequently, but not always, fills slots in larger structures (e.g. paragraph)."[16]

This definition has been further qualified by declaring that each sentence as "an independent linguistic form".[17] This is in consonance with the definition given by Jaimini as interpreted[18] by Devasthalī, based on *ekārthatā* (singleness of purpose), who also starts with the assumption that "a grammar is essentially a theory of the

[13] E.g. *Tunica* by Mary Haas.

[14] G. N. Shastri, *The Philosophy of Word and Meaning*, p. 83: "Puṇyarāja takes care of to point out that both Pāṇini and Patañjali have recognized the indivisibility of a sentence, which is not any new thesis that medieval or later grammarians have introduced in their system of thought." – "Sūtrakārasya tv atiṅgrahaṇād ekam evā khaṇḍaṃ vākyam arthaikatvād ākhyatabhedepyabhipretam iti gamyate"; also:- Sūtrakārābhiprāyam anusṛtya, khaṇḍapakṣa eva vākyavākyārthayor abhyupagamyata iti darśitam, Idānīm Bhāṣyakārābhiprāyeṇāpi sa evābhyupagantavya ityupakramyate" (Commentary of Puṇyarāja, p. 90).

[15] Vākyapadīya, I.73.

[16] B. Elson, and V. B. Pickett, *Beginning of Morphology and Syntax*, p. 27.

[17] *Ibid.*

[18] D. V. Devasthalī, *Mīmāṃsā – The Vākya-Śāstra of Ancient India*, Chapter XII, p. 186: "And we find Jaimini defining a *Vākya* at M.S. II.1.46 in the words: 'So long as a single purpose is served by a number of words which on being separated are found to be wanting i.e. incapable of effecting their purpose, they form one sentence: ***arthaiktvādekaṃ vākyam sākāṅkṣaṃ ced vibhāge syāt.***"

sentences of a language".[19] Pāṇini had in view the sentence as the starting, as well as the ultimate, point in description. The entire framework is that of substitution for one syntactic concept either by way of compounding, derivation (primary or secondary) or inflection. Pāṇini did not draw a line between morphology and syntax as corroborated by Bhartṛhari that there is no absolute dichotomy between a sentence and pada (word).[20] The artificiality of this dichotomy has come to be recognized by the linguists, as Sydney Lamb has ably shown in his paper on machine translation. The only division which he thinks useful is between the recurrent and non-recurrent constructions,[21] i.e. between a lexeme and a non-lexeme, between inflectional and derivational constructions. It is therefore a false notion that Pāṇini's description is limited to morphology alone, and there too to the paradigmatic method of description.[22] The basis of Pāṇinian syntactic analysis seems to be a combination of transformational and stratificational techniques. Let us distinguish these two techniques. A linguistic form belongs to *type*, while the sequence itself belongs to *token*, e.g. in the sentence "The farmer killed the duckling", the four forms "the", "farmer", "killed" and "duckling" are types, while all the five sequences are tokens; so, token is the repeated use of type, and a text is that which has this relationship.[23] The transformational technique takes into account the text, while the stratificational one takes into account only the type, i.e. the language (the system underlying the text). The second point of difference is that a transformational grammar has a number of strings, some are "syntactic rules", some are "terminal strings" and others morphophonemic rules, "so that 'noun phrase is extended as an adjective + a noun' is a syntactic rule and the resultant form is a terminal string; the terminal string is converted into the phonetic description of an utterance through a morphophonemic rule."[24] A stratificational grammar takes language not to be a set of sentences, but the system which governs them, and has four relationships in a synchronic description:[25]

[19] Noam Chomsky, *Proceedings of Symposia* in *Applied Mathematics* Vol. XII, p. 7: "A grammar, in the sense described above, is essentially a theory of the sentences of a language; it specifies this set (or generates it, to use a technical term which has become familiar in this connection) and assigns to each generated sentence a structural description. It is not however, a model of the speaker or hearer, it neither synthesizes particular sentences, as does the speaker, nor does it recognize the structure of presented sentences, as does the hearer. It is quite neutral as between speaker and hearer in this respect."

[20] Vākyapadīya, I.77: "Vākyāt padānāmatyantam praviveko na kaścana".

[21] Sydney M. Lamb, *Proceedings of the National Symposium on Machine Translation*, edited by H. P. Edmundson (1961), p. 144: "This division however has increasingly come to be recognized as an artificial one which gives entirely too much importance to the space (or, for the corresponding situation in spoken language to junctural phenomena), whose grammatical significance is actually only incidental. Some linguists have advocated doing away with the morphology-syntax distinction altogether. However, a strong case can be put forth for making the division between recurrent and non-recurrent constructions (with some qualification). This would enlarge the area of syntax to include inflectional as well as productive derivational constructions."

[22] C. F. Hockett, "Two Models of Grammatical Description", *Readings in Linguistics*, p. 386.

[23] Gustav Herdan, *Type-Token Mathematics*, p. 15.

[24] Noam Chomsky, "On the notion 'Rule of Grammar' ". *Proceedings of the Symposia* in *Applied Mathematics*, Vol. XII, p. 8.

[25] Sydney Lamb, *On the Mechanization of Syntactic Analysis*, p. 2.

(i) Type : Token (existing only in the text)
(ii) Class : Member
(iii) Combination : Component
(iv) Eme : Allo.
The fourth relationship is stratified as:

Outside the language	Semantic
Within the language	Sememic Morphemic Morphophonemic Phonemic
Outside the language	Phonetic

Eme and allo do not exist on the same stratum, whereas this sort of stratification is redundant to the transformational technique. What Pāṇini did was to present a set of rules in the order a transformationist par excellence would design to do, but at the same time he had a stratification in his mind close to that of Lamb. He has therefore succeeded in giving rules of generation and analysis, only one has to proceed from two ends. In order to analyse a sentence one has to start from the end, but in order to generate one, one has to start from the beginning.[26]

4.2. SENTENCE TYPES

The classification of sentences in Pāṇini's grammar is based on:
(1) situations in terms of certain boundary markers,
(2) grammatical combinations in terms of components, and
(3) representation at the morphemic level.

Type	Reference	Boundary marker
(1) Interrogation (*praśna*)	VIII.2.100 VIII.2.105	(1) The grave vowel at the end of a question is supralong (2) The circumflex vowel either at the beginning or at the end of the question is supralong
(a) Interrogation with (*satyam* = really)	VIII.1.32	Finite verb is grave
(b) Interrogation limited to verb with (*kiṃ* = why)	VIII.1.44–45	Finite verb is grave, it does not have a preverb or a negative prefix
(c) Interrogation assuming a yes reply (*pratyārambha*) with *na ha*	VIII.1.31	Finite verb not grave
(2) Reply to a question (*pṛṣṭa prativacana*)	VIII.2.93	(1) Finite verb supralong and acute
(3) Initiating a topic of conversation (*abhyādāna*)	VIII.2.87	The word "*om*" of such a sentence is acute and supralong

[26] *Ibid.*, p. 7.

Type	Reference	Boundary marker
(4) Request (seeking permission) *anujñaiṣaṇā* with *nanu*	VIII.1.43	Finite verb not unaccented
(5) Command or order		Circumflex vowel of a finite verb of a relative clause is supralong
(a) Verbal order (*praiṣa*)	VIII.2.104	
(b) Multipurpose order (*viniyoga*) with *aha*	VIII.1.61	The first inflected form is not unaccented
(6) Address (*āmantrita*)	VIII.1.19	(1) The address if not initial is grave
	VIII.1.55	(2) Not unaccented after *ām* intervened by one *pada*
	VIII.1.72–74	(3) As if non-existent if it precedes others, except when it precedes another address in case it is non-plural and non-particularizer
(7) Call from distance (*dūrahvāna*)	VIII.2.84–85	(1) The final vowel is acute and supralong as well as (2) The words *hai*, *he*
(8) Reply to a greeting (*pratyabhivāda*)	VIII.2.83 VIII.2.86 (dialect)	The final vowel is acute and supralong if the replier is not a *śūdra*
(9) Promise (*pratiśravaṇa*)	VIII.2.99	The final vowel is acute and supralong
(10) Respect (*pūjā*)	VIII.1.37–40	(1) A finite verb after *yāvat*, *yathā*, *tu*, *paśya*, *paśyata*, *aha*, *aho* is not grave
	VIII.1.67–68	(2) After the respect-modifier *kāṣṭha*, etc. the modified is grave even if it is preverbed
(11) Disregard (*kṣiyā*)	VIII.1.60	(1) If with *ha* first finite verb not grave
	VII.2.104	(2) Circumflex vowel of an anticipatory finite verb is supralong
(12) Narration (*ākhyāna*)	VIII.2.104	circumflex vowel of an anticipatory finite verb is supralong
(13) Acceptance (*sanmati*)	VIII.2.103	Initial circumflex vowel of an address is supralong
(14) Anger (*kopa*)	VIII.2.103	— —
(15) Fault-finding (*asūyā*)	VIII.2.103	— —
(16) Aspersion (*kutsana*)	VIII.2.103	(1) — —
	VIII.1.27	(2) *Gotra*, etc., after a finite verb grave
	VIII.1.69	(3) A finite verb even with a preverb is grave before a declensional form showing aspersion
(17) Rebuke (*bhartsana*)	VIII.2.95–96	(1) First address if repeated has its final vowel supralong and acute (2) A finite verb preceded by *aṅga* if anticipatory has final vowel supralong and acute
(18) Ridicule (*prahāsa*)	VIII.1.46	(1) With *ehi* and *manye*, *LṚT* form is not grave
(19) Hurry (*parīpsā*)	VIII.1.42	With *purā* a finite verb is not grave
(20) Recollection (*vicāryamāṇa*)	VIII.2.98	The initial word has its final vowel supralong

Note: Pāṇini has not defined these types as the names must have been quite obvious to his audience. He merely described their particular nature differentiated from other types. These types are based on situation of the utterance.

4.2.1. Sentence as a combination has been defined by Pāṇini's commentators in several ways, viz.[27]

(1) a finite verb combined with indeclinable, declensional form related to it and a modifier,

(2) one single finite verb as the immediate constituent,

(3) words completed by a finite verb.

But Pāṇini himself has implicitly defined a complex sentence as a combination of *clauses* (marked by a finite verb form *tiṄ*), which may be coordinate *(samāna)* or non-coordinate *(asamāna)*, and which may be connected by connectives like *ca, yāvat* etc. (as illustrated in VIII.1), and a simple sentence as a combination of *padas* (words) which may be marked either by a declensional or a conjugational ending. So a sentence can be algebraically defined as

(1) $S \rightarrow \Sigma P_n$ (s sum of related n *Padas* where n is any positive integer)

(2) $P \rightarrow P_1$ or P_2

(3) $P_1 \rightarrow (Bn) + SBI$, $P_2 \rightarrow (BV) + SBVI$

(4) $B \rightarrow (B_1)$ or B_2, $BV \rightarrow (BV_1)$ or BV_2

(5) $B_2 \rightarrow (B_1) + SBD)\ SBD_n$, $BV_1 + SB/BVD \rightarrow BV_2$

(6) $B_1 \rightarrow (BV) + SBVD$, $BV_1 \rightarrow preverb_n + BV$

(7) SBI → *sU-P* or Zero, SBVI → *ti-Ṅ*

(8) SBD → *Feminine* + *Taddhita*, SBVD → *Kṛt*.

The B_n combination has been dealt with in the preceding chapter under the heading "Compounding". The third chapter of the A. deals with $B/BV + SB/BV\ D \rightarrow BV_2$ and BV +SBVD/SBVI combinations, while chapters IV and V deal with the combination B_n + SBD (Feminine), B_n + SBI and B_n + SBD.

The P ↔ P relationship called *sāmarthya* and made an essential requirement for a syntactic combination is of two types:

(1) *Kāraka* (Verbal) relationship, when one of the P's must be a verb and the other a non-verb (I.4.23–55),

(2) non-*Kāraka* relationship *(Śeṣa)*, when such a restriction as above is not required (II.3.50).

A *Kāraka* relationship is sixfold:

(i) Ablation *(apādāna)*, which is not physical so much as structural as is evident from the Mbh. commentary on I.4.24,

(ii) Indirect Goal *(sampradāna)*,

(iii) Substratum *(adhikaraṇa)*,

(iv) Goal *(karma)*,

(v) Instrument *(karaṇa)*,

(vi) Agent *(kartṛ)*.

A non-Kāraka relationship can be either appositional *(samānādhikaraṇa)* or non-appositional *(asamānādhikaraṇa)*. An appositional relationship is marked by agree-

[27] (i) "Ākhyātaṃ sāvyayakārakaviśeṣaṇaṁ vākyam" (Vār., 9 on A.II.1.1); (ii) "Vākyam tad api manyante yat padam caritakriyam" (Vākyapadīya II. 326); (iii) Ekatiṅ Vākyam (Vār., 10 on A.II.1.1).

ment in a number of grammatical categories such as case, gender, person, number, conjugation, etc. The representation of Kāraka relationship is either explicit through a suffixation or compounding, or, if implicit, it has to be expressed through a case-ending (II.3.1). Pāṇini's "word" as a syntactic unit is different from the "word" of the popular usage: it is "infra-word" and "supra-word" fused into one,[28] and, by virtue of its structural definition *suptiṅantam padam* (A.I.4.14) as different from the phonological word defined in A.I.4. 15–17, it is a unit useful for the description of this particular language.

4.2.2. Sentence types described in terms of representation according to Pāṇini are:

	Reference	Representation by	Under the condition if any
ASPECT:			
1. *Vidhi* (optative)	III.3.161–162	*LIṄ*, *LOṬ*	
2. *Anujñaiṣaṇā* (seeking permission)	VIII.1.43	described under 4.2.1	
3. *Āmantraṇa* (giving free choice)	III.1.161–162	*LIṄ*, *LOṬ*	
4. *Nimantraṇa* (invitation for one particular thing)	—	—	
5. *Prārthanā* (request)	—	—	
6. *Āśiṣ* (benediction)	III.4.116	*LIṄ* (nonfull stem)	
7. *Atisarga* (seeking permission for a free choice)	III.3.163	(1) *LOṬ* and *kṛtya*	
	III.3.164–165	(2) *LIṄ*	(2) After one *muhūrta*
		(3) *LIṄ*	(3) with *sma*
8. *Praiṣa* (order)	III.3.163	(1) *LOṬ* and *kṛtya*	
	III.3.164	(2) *LIṄ*	after one
	III.3.165	(3) *LOṬ*	*muhūrta* with *sma*
9. *Kāmapravedana* (expressing one's purpose)	III.3.153	*LIṄ*	
10. *Adhiṣṭa* (polite)	III.3.161–162	*LIṄ* and *LOṬ*	
	III.3.165	*LOṬ* only	with *sma*
11. *Sambhāvana* (probability)	III.3.154	*LIṄ* (optionally)	if it is a substitute for *alamiti* and there is no *yadi* starting the sentence
12. *Anavakḷpti* (impossibility)	III.3.145–148	(1) *LIṄ* and *LṚṬ*	(1) with or without preceding *kim*
		(2) *LṚṬ* only	(2) with *kimkila*
		(3) *LIṄ* only	(3) with *jātu*, *yadi*, *yacca* and *yatra*
13. *Kriyāprabandha* (continuity)	III.3.135	*LUṄ* and *LUṬ*	in the non-today temporal sense
14. *Kriyātipatti* (condition)	III.3.139–141	*LṚṄ*	(1) when there is cause-effect relationship
			(2) when it refers to past

[28] Joseph H. Greenberg, *Essays in Linguistics*, Chapter II, p. 27.

	Reference	Representation by	Under the condition if any
15. *Kriyāsamabhihāra* (iterative)	III.1.22 III.4.2	*yaṄ* *LOṬ*	after a monosyllabic consonant initial BV
16. *Samuccaya* (simultaneousness)	III.3.3 III.3.5	*LOṬ* optionally *LOṬ*	
17. *Sampraśna* (ascertaining by a question)	III.3.161–162	*LIṄ* and *LOṬ*	
18. *Hetumat* (causative)	III.1.26	*ṆI*	
19. *Hetuhetumat* (cause-effect)	III.3.150	*LIṄ*	
20. *Prāptakāla* (occasion)	III.3.163	*LOṬ* and *kṛtya* suffixes	
21. *Icchā* (desiderative)	III.1.7	*saN*	
22. *Āśaṃsā* (hope)	III.3.132–134	(1) Past and Present suffixes (2) *LṚṬ* (3) *LIṄ*	 with *kṣipra*
23. *Abhijñāvacana* (*recollection*)	III.2.112–114	(1) *LṚṬ* (2) but not with *yat* (3) optionally if the sentence is to be left incomplete	
24. *Garhā* (derogatory)	III.3.142–144	(1) *LAṬ* not necessarily (2) *LIṄ* optionally	with *api* and *jātu* with *katham* and *kim*
(a) *Bhāvagarhā* (derogation affecting action only)	III.3.149 III.1.24	*LIṄ* *yaṄ*	with *yacca* and *yatra* after *lup*, etc.
25. *Pṛṣṭaprativacana* (reply to a question)	III.2.120–121	*LAṬ*	to represent past, if with *nanu*
26. *Parīpsā* (hurry)	III.4.52–53	*ṆamUL*	if preceded by an ablative
27. (*Amarṣa*) bad feeling	III.3.145–147	(1) *LṚṄ LṚṬ* (2) *LIṄ* (3) *LṚṄ*	(1) with *kim* (2) with *jātu* or *yat* (3) with *yacca* and *yatra*
28. wonder (*Citrīkaraṇa*)	III.3.150	(1) *LIṄ* (2) *LṚṬ* otherwise	— (2) if there is no *yadi*
29. *Prahāsa* (ridicule)	I.4.106	2nd person with the root and 1st person with *manye*	
VOICE:			
1. Active (*kartṛ*)	I.3.78 I.3.82–85, 90–93 I.3.17–71	(1) active ending (2) middle ending	conditions enumerated in the sūtras
(1) *karmavyatīhāra* (reciprocity) (2) *kartrabhiprāya kriyāphala* (reflexive)	I.3.14–16 I.3.72 I.3.79–83 I.3.86–89 III.4.71–72	(3) — (4) — (5) active ending *Kta*	

	Reference	Representation by	Under the condition if any
(ii) Passive (*bhāvakarma*)	I.3.13	(1) middle ending	
	III.1.66	(2) *CiṆ* (~ *CLI*)	
	III.4.69	(3) *yaK*	after a full stem form
		(4) *L* (conjugational suffixes)	
	III.4.70	(5) *kṛtya, Kta, KHal*	with intransitive stems only
TENSE:			
1. Past, (*bhūta*)	III.2.84.122	*ṆinI* etc. *LIṬ, Kta KtavatU, LUṄ* and *LAṄ*	
	III.3.135		
	III.3.140–144		
(a) past non-today	III.2.111	*LAṄ*	
	III.2.112–114	*LṚṬ* but not if there is *yadi*	recollection
(i) unseen past	III.2.115	*LIṬ*	
	III.2.116	*LAṄ* and *LIṬ* both	(1) with *ha* and *śaśvat*
	III.2.17		(2) proximate question
	III.2.118	*LAṬ*	(1) with *sma*
(ii) seen past	III.2.119	(1) *LAṬ*	(1) —
	III.2.122	(2) *LAṬ* & *LUṄ*	(2) with *purā* but without *sma*
(b) non-specific	III.2.119	(1) *LAṬ*	(1) with *sma*
	III.2.120	(2) —	(2) with *nanu* in reply to a question
	III.2.121	(3) — optionally	with *na* or *nu*
	III.2.110	(1) *LUṄ*	
	III.2.84–104	*ṆinI, K'VI'P, KvanIP, Ḍa, Kta, KtavatU, atṚN, KānaC, KvasU*	under preceding conditions enumerated in the respective sūtras
	III.3.1–2	*uN* etc. optionally	
2. Present	III.2.123	(1) *LAṬ*	(1) if in apposition with non-nominative case endings or an address nominative
	III.2.124–134	(2) *ŚatṚ* and *ŚānaC* (Varying with *ŚānaN*)	
		ĆānaŚ	(2) indicator or cause of action
			(3) other conditions given in III.2.129–134
	III.2.135	(3) *tṛN*	
	III.2.136–138	(4) *iṣṇuC*	with *alaṃkṛ* etc.
	III.2.139	(5) *Ksnu*	with *glā* etc.

	Reference	Representation by	Under the condition if any
	III.2.140	(6) *Knu*	with *tras* etc.
	III.2.141–145	(7) *GHinu N*	with *śam* etc.
	III.2.146	(8) *'VU'Ñ*	with *nind* etc.
	III.2.148–186	(9) *'YU'C, ukaÑ, ṢākaN, inI, āluC, ru, KmaraC, GHuraC, KuraC, KvaraP, uka, ra, u, Ki, KiN, najIN, āru, varaC, K'VI'P, Ḍu, ṢtraN, itra*	conditions enumerated in the sūtras
	III.2.187–188	*Kta*	(1) with *ÑI*-class (2) with verbs meaning *mati* etc.
3. Future	III.3.4	*LAṬ*	with *yāvat* or *purā*
(a) non-specific	III.3.5–8	*LAṬ* optionally	(1) with *kadā* and *karhi* (2) to indicate achievement (3) to indicate *LOṬ*
	III.3.9	*LIṄ*	(1) Future after one *muhūrta*
	III.3.10–12	*tumUN, Ṇ'VU'L, GHaÑ*, etc. *aN*	With a finite verb
	III.3.13	*LṚṬ*	
	III.3.14	*ŚatṚ* and *ŚānaC*	
(b) non-today future	III.3.15	*LUṬ*	

Besides these, Pāṇini has also specified under non-verbal relationship, such other concepts as similarity *(aupamya*, I.4.79), degree (comparative and superlative, *atiśayana*, V.3.55–57), demunitive *(alpārtha)*, exception (*varjana*, I.4.88), comparison and contrast (*hīna*, I.4.86, *adhika* I.4.87, II.1.33, II.3.9, and *īsvara* I.4.97–98, II.3.9), division (*bhāga*, I.4.90), indication *(lakṣaṇa)*, limit *(maryādā, abhividhi, nirdhāraṇa)*, collectiveness *(samuccaya*, I.4.96), repetition *(vīpsā)*, frequency (*ābhīkṣṇya*, III.4.22), etc., and he has given their respective representations at the morphemic level. To a great extent these and the preceding type-concepts are close to the *sememic* concept, in as much as one single *sememe* is representable by more than one morpheme, and more than one sememe is representable by one morpheme. The third person singular sentences (serving as a framework for substitution in the majority of the cases of secondary derivational suffixation in chapters IV and V) are really a transformation device, as the first amongst the related words of these sentences becomes the consti-

tuent after which the respective suffix, when added to derive a form which is a substitute for the respective sentence.

To conclude Pāñini's grammar follows a syntax-cum-morphology pattern.

4.3. MORPHEMICS

4.3.0. Pāṇini did not define a term like *morpheme*, though his classification built up binarily (as given on p. 122) assumes three main principles:

(1) the minimal form has a meaning of its own,[29]

(2) it can be described in terms of its total environment (i.e. distribution),[30]

(3) it is not composed of phonemes, but is represented by a certain, more or less compact, arrangement of phonologic matterial.[31]

This concept of a form was based on the principle of immediate constituency *(aṅgāṅgibhāva)*, so that

(1) even a finite verb form in citation, by virtue of its functioning in the slot of a non-verbal form, has always been used with a declensional (*sU-P*) form, and even an indeclinable does not get zero-declension when it is to be referred as citation form (*sattva*, I.4.57),

(2) a compound or a derivation is treated nearly as an extended secondary non-verbal form (I.2.46),

(3) the break-up of sequences is both inwards and outwards, e.g. in the sequence *jugupsayā*, the break-up envisages *jugupsā* to be an *aṅga* (constituent) for *Ṭā*, then *jugupsa* for *ā*, and lastly *gup* for *saN*. This makes the analysis transparent.[32] Louns-

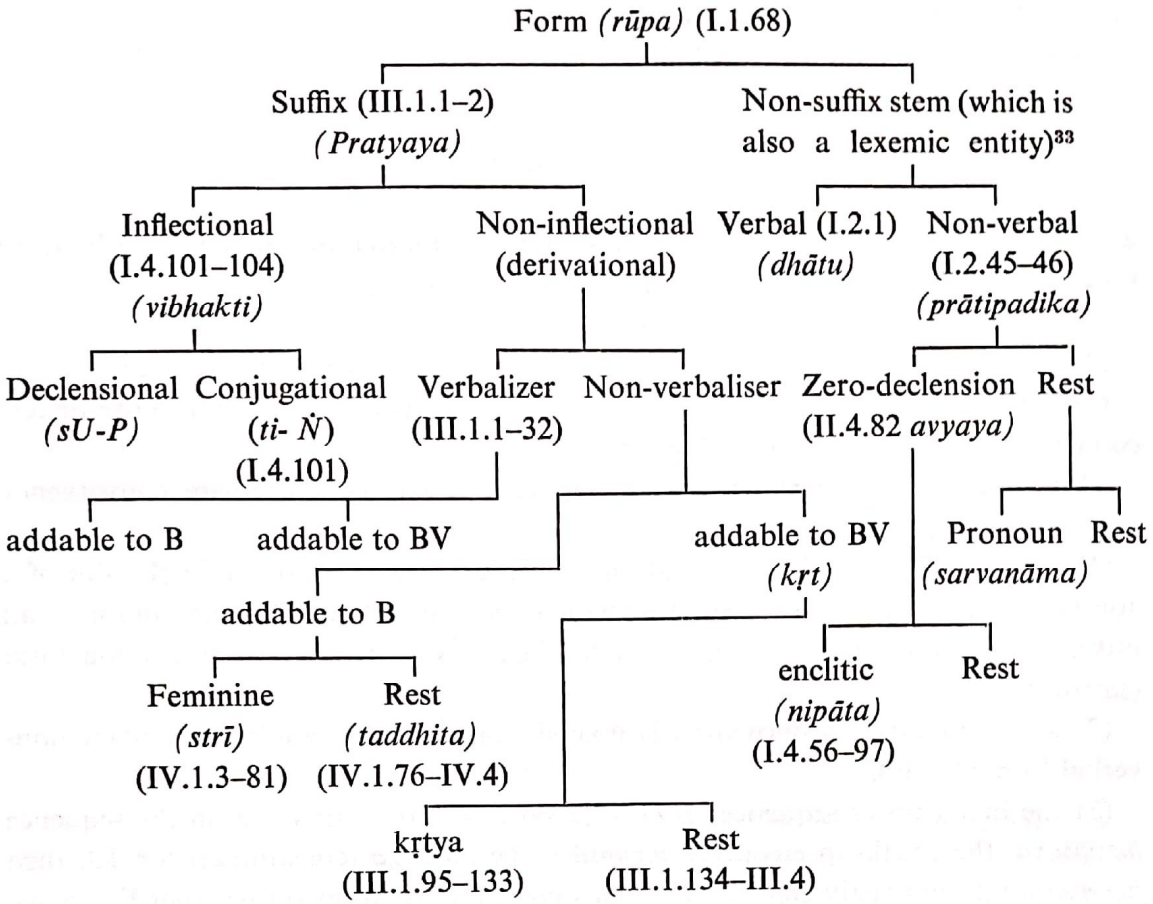
[29] Eugene A. Nida, *Morphology, The descriptive analysis of words* p. 151: "No morphemes or combinations of morphemes are identical in meaning."

[30] Zellig S. Harris, *Structural Linguistics*, p. 15: "The environment of position of an element consists of the neighbourhood, within an utterance, of elements which have been set up on basis of the same fundamental procedures which were used in setting up the element in question. Neighbourhood refers to the position of elements, before, after and simultaneous with the element in question." – And further: "The distribution of an element is the total of all environments in which it occurs, i.e. the sum of all the (different) positions (or occurrences) of an element relative to the occurrence of other elements."

[31] C. F. Hocket, *A Manual of Phonology*, p. 15: "There is a traditional view which sees phonologic and grammatic units as differing primarily as to size-level, so that the whole design of language involves but a single hierarchy: a morpheme consists of one or more phonemes; a word consists of one or more morphemes; phrase of one or more words and so on. The present view is radically different. Morphemes are not composed of phonemes at all. Morphemes are indivisible units. A given morpheme is represented by a certain more or less compact arrangement of phonologic material, or, indeed, sometimes by one such arrangement and sometime by another. If we call any such representation a morph, then it becomes correct to say that a morph has a phonologic structure that it consists of an arrangement of phonemes." Compare: Padāni vākyetāny eva varṇās te ca pade yadi, varṇeṣu varṇabhāgānām bhedas syat paramāṇuvat. Bhāgānām anupaśleṣān na varṇo na padam bhavet, teṣām avyapadeśyatvāt kim anyad apadiśyatām (Vākyapadīya, II.28.9)

[32] Rulon S. Wells, *Readings in Linguistics*, p. 187: "Our general principle of IC analysis is not only to view a sequence when possible, as an expansion of shorter sequence, but also to break it up into parts of which some or all are themselves expansions."

TABLE III



bury has remarked: "The grammatical structure of a language may be described in terms of its morphemes and their rules of combination, which include rules of order, of selection and derivation."[34] Pāṇini's arrangement is based on this principle. The order in which suffixes are addable, is described very neatly, so that B or BV_1+*saN* etc. → BV_2) + SBVD → B_2) + SBDF) + SBD) → B_3 is in a continued circular string which can restart from the initial point, while SBI and SBVI serve as halting points

[33] Sydney M. Lamb, *Proceedings of the National Symposium on Machine Ttanslation*, edited by H. P. Edmundson (1961), p. 145: "The syntax of a language can be completely described by means of

(1) a list of the distribution classes of lexemes, with the membership of each;

(2) as list of constructions. A construction is completely characterized by specification of (1) the distribution classes of the constituents which enter into it; (2) the order in which the constituents occur relative to each other;

(3) the syntactic juncture (such as space or comma), if any, which occurs between the constituents; and

(4) the distribution class of the constitutes. The only important difference between the views of the construction and most earlier ones is the fourth item names above, namely, specification of the distribution class of the constitutes. With this property included in the characterization of a construction all distribution classes of units on the morphemic level which can occur as constituent are defined either by constructions or by the listing of lexeme classes."

[34] F. G. Lounsbury, *Readings in Linguistics*, p. 382 (also appeared in *Anthropology*, No. 48 of 1953).

in the circle, with the result that, if the circle has to rotate, the B + SBI or BV + SBVI resultant forms are to be treated as citation forms, as far he has in view, both morpheme and sequence classes[35] (as defined by Rulon Wells).

4.3.1. The main contribution of Pāṇini to morphemic analysis can be summed up as follows:

(1) setting up the following types of representational situations:[36]

(a) diversification, e.g. agent: active ending; *kṛt*;

(b) neutralization, e.g. middle ending: agent and goal;

(c) collective representation, e.g. an adverbial compound;

(d) portmanteau representation, e.g. most of forms which are said to be *nipātita*;

(e) zero representation, e.g. *sU* etc.: // Ø// (by the force of II.4.82);

(f) empty representation, Ø: *kṛ* in *LIṬ* (by the force of III.1.40);

(g) tactic phenomena, e.g. secondary derivation as in *ahnā niṛvṛttam āhnikam* (by the force of V.1.79);

(2) positing zero (defined as disappearance in I.1.60) of two types, "positive" *(Lopa)* and "negative" *(LU)*, the former serving as a full functionary ruling both its constituent and itself, and the latter limited to itself only (A.1.1.62–63); the negative has been further classified into three subtypes:

(a) *LUK* (1) represented by *LUK* of the determining member in a compound *(upasarjana)* (I.2.49), (2) represented by different types of vowel grade alternations of the reduplicated stem when it is *yaṄ* (A.VII.4.82–88, 90-92);

(b) *LUP* (1) represented by the same gender and number of the formation as that of its constituent (I.1.51), (2) represented by the same gender and number of the qualifier construction of the formation as that of its constituent (I.1.52);

(c) *ŚLU* (1) represented by reduplication of its constituent (VI.1.10), (2) represented by vowel alternation of specified stems in VII.4.75–78.

The negative subtypes are restricted to the suffix-class only and as such are specific; this notion of zero has been pointed out by W. S. Allen as the origin of mathematical notion of zero,[37] in as much as they are plotting on a structural graph to fill in a vacuum. The caution observed by Pāṇini in setting up zero is in full consonance with the modern principles that "a zero morph is never set up when the meaning assigned

[35] Rulon S. Wells, *Language*, 23 (1947), pp. 81-117: "Besides morpheme classes, the grammarian sets up classes of other expressions; we will call these sequence-classes, since every expression is a sequence of one or more morphemes. Given a sequence S, a sequence-class to which S belongs is defined as the class of all sequences whose first morpheme belongs to the same morpheme class as the first morpheme of S, whose second morpheme belongs to the same morpheme-class as the second morpheme of S and so on; it follows that all members of a given sequence class contain the same number of morphemes. Given *black bird, redcoat* belongs to the same sequence-class; for black belongs to the same class as coat, and the stress pattern, here treated as morpheme or morpheme sequence."

[36] Sydney M. Lamb, "Types of situation found in linguistic representation", paper read before Linguistic Society of America, Aug. 1961.

[37] W. S. Allen, "Zero in Pāṇini" (Private Communication).

would be implicated by the selection of particular allomorph of some one other morpheme";[38]

(3) setting up abstract morphemes represented by a combination of abstract as well as concrete entities, which in turn are represented by concrete entities at the next lower stratum;

(4) setting up first a morpheme and then its alternants, which differ only in morphological or phonological distribution of complementary nature;

(5) thus minimizing the number of morphemic units;

(6) making meaning dependent on environment explanable in terms of forms;[39]

(7) defining meaning of suffixes through the indication of the sememic entity they represent, as in the case of *kṛt*-suffixes, or through the grammatical categories such as gender and number, as in the case of inflectional suffixes, or through the sentence frames which they substitute, and thus avoiding descriptive names as far as possible, which cannot be defined in structural terms;

(8) arranging in an order that minimizes the number of operations and that automatically fixes the position of morphemes in a sequence.

4.3.2. Pāṇini is deliberately silent on the explicit meaning of the preverb. In fact he segmented them from the verbs on the basis of their distinctly different behaviour in morphophonemics as independent units. Similarly, in the case of suffixes added to form a stem out of a compound combination, it is an empty representation. The discussion in Paramalaghumañjūṣa or Vaiyākaraṇa Bhūsaṇa on the meaning of *nipāta* (enclitic) or the verbal stem forming suffixes is very interesting. It reveals two things; firstly, wherever there are *ŚaP* and *ti-Ṅ* etc., the *ti-Ṅ* etc. denote the function and *ŚaP* etc.[40] the action, so that there may not be any ambiguity of function between a stem-former conjugational suffix and a personal ending; secondly, the distinction between a preverb and a *nipāta* not based on the dichotomy of *dyotakatva* (suggestiveness) and *vācakatva* (expressiveness) in as much as a preverb, is a special subclass of *nipāta*, defined only in terms of its functional behaviour, viz. its position before reduplication and *aṬ* (the past marker), its independence with respect to accent and other morphophonemic operations, and its distinctness from the prepositions having the same phonemic shape *(karamapravacanīya)* in environment and meaning.[41] The term *pratyaya* has been defined to be *para* (A.III.1.2), i.e. dependent, in other words: a bound form, and it is not the combination of abstract and concrete phonemic entities that constitutes a *pratyaya* (suffix). In that case even arrangement or a substitute would be a suffix, and the very fact that they have been treated as parts of the

[38] F. G. Lounsbury, *Readings in Linguistics*, p. 282.

[39] Eugene A. Nida, *Morphology, The Descriptive Analysis of Words*, p. 152: "Meaning is definable by environment."

[40] See Paramalaghumañjūṣā – Lādeśārtha "vicāra phalavyāpārayostatra phale taṅyakciṇādayah, Vyāpāre śapśnamādayastu dyotayantyāśrayānvayam".

[41] See Vaiyākaraṇabhūṣaṇa – Nipātārtha- nirṇaya "Prādayo dyotakāścādayastu vācakā iti nyāyamate sthitam vaiṣamyam yuktisāmyāt."

suffix or their constituent stem in the chapters VI to VIII, the subtle observation made by Kaiyaṭa in his Pradīpa on the Mbh. under A.3.1.1, is very clear on this point.[42] Pāṇini and his school were very clear on the point that the segmentation of a *pada* is anything but artificial, in as much as it is the sentence which is real.[43] The beauty of the morphemic analysis lies in fact in evolving a metacriteria of segmentation which gives the advantages of both "IA" (Item arrangement) and "IP" (Itemprocess) grammars.[44] As rightly observed by P. C. Chakravarti, "whatever may be the intrinsic value of sphoṭavāda from a psychological standpoint, it can not be denied that the assumption of an indivisible unit as *sphoṭa* is materially consistent with the fundamental principles of grammar."[45]

4.4. MORPHOPHONEMICS

4.4.0. *The arrangement.* – Except for definitional rules in chapters I and II and for such morphophonemic alternations which are set up for economy as they are a set apart, ... sharing the following features:

(1) the phonemic similarity is conspicuous by its absence, e.g. *bhū* ~ *as* (II.4.52), *jagdh* ~ *ad* (II.4.36), *gāṄ* ~ *iṄ* (II.4.49) and zero suffixes enumerated in II.58–82;

(2) the assumption of alternation is based on complementary distribution and structural uniformity, so that an *avyaya* (indeclinable) can be related to a verb syntactically through the zero representation of the relational concept (II.4.82), and periphrastic future 3rd person endings (seemingly indentical with nominative endings) are brought in line with the *tiP tas* '*JH*'*i* as their alternants;

(3) they affect a restricted range of cases, the arrangement runs in the chapters VI to VIII in the following order:

Chapter VI:

(1) reduplication: (as a part of *LIṬ*, *saN*, *aṄ*, *ŚLU* and *CaṄ*) VI.1.1–12;
(2) reduced grade alternation, VI.1.13–36;
(3) exceptions to (2), VI.1.37–44;
(4) *ā* ~ *e*, *o*, *ai*, *au*, VI.1.45–57;
(5) stem alternation of an irregular type, VI.1.58–66;
(6) zero suffix (irregular and of rare occurrence), VI.1.67–70;
(7) *tUK* as a part of the stem, VI.1.71–76;
(8) vowel sandhi, VI.1.77–134;
(9) *s* augment, VI.1.135–157;

[42] See Kaiyaṭa-Pradīpa on Mbh. under A.III.1.1: "Yat paraḥ sa pratyayaḥ na ca vikārāgamaḥ pare na hi paratvanimitta pratyayasañjñā api tu pratyayasañjñanimittam paratvam."

[43] See Vākyapadīya II.10: "Yathā pade vibhajyante prakrtipratyayādayaḥ apoddhārastathā vākye padānamupavarṇyate", and Vaiyākaraṇabhūṣaṇa Kar. 59: "Vākyasphoṭoti niṣkarṣe tiṣṭhatīti matasthitiḥ."

[44] C. F. Hockett, "Two Models of Description", *Readings in Linguistics*, p. 399 (also appeared in *Word*, 10, p. 210-211).

[45] P. C. Chakravarti, *Philosophy of Sanskrit Grammar*, p. 137.

(10) internal accent sandhi, VI.1.158–222;
(11) internal accentshift in a compound combination, VI.1.223–VI.2.199;
(12) non-zero representation of the declension in a compound, VI.3.1–33;
(13) masculine feminine in compound and its exceptions, VI.3.34–42;
(14) shortening of final long vowel of the first component in a compound, VI.3. 43–45;
(15) other alternations of the final vowel of the first component in a compound, VI.3.46–110;
(16) stem-final vowel or penultimate vowel alternation (long ~ short), VI.3.111–139;
(17) stem-alternation as a part of the suffix of which it is a constituent: (i) of a nonverbal stem, VI.4.2–14, (ii) of a verbal stem, VI.4.15–100;
(18) alternation of verbal suffixes, VI.4.101–109;
(19) verbal stem alternation, VI.4.110–126;
(20) non-verbal stem alternation, VI.4.127–175.

VII Chapter:

(21) suffix representation, VII.1–49;
(22) *asUK* augment, VII.1.50–51;
(23) *sUṬ* augment, VII.1.52;
(24) *nUṬ* augment, VII.1.54–57;
(25) *nUM* augment, VII.1.58–87;
(26) vowel grade alternation, VII.1.88–103, VII.2.1–7;
(27) *iṬ* augment and its exceptions (with verbal stem), VII.2.8–78;
(28) stem final vowel alternation, VII.2.79–VII.3.31;
(29) stem final alternation, VII.3.32–VII.4.97.

VIII Chapter – Phonemic Representation:

(30) doublets, VIII.1.1-15;
(31) external accent sandhi, VIII.1.16–74;
(32) outer circle rules – miscellaneous sandhi (internal), VIII.2.1–81;
(33) sentence intonation, VIII.2.82–108;
(34) *rU* final segment of the first element, VIII.3.1–12;
(35) zero ~ consonant (final), VIII.3.13–23;
(36) consonant sandhi (nasal and *visarga*), VIII.3.24–38;
(37) *ṣ* ~ *s*, VIII.3.39–119;
(38) *ṇ* ~ *n*, VIII.4.1–44;
(39) gemination and cluster sandhi, VIII.4.45–65;
(40) sentence – pause sandhi, VIII.4.56;
(41) word final sandhi, VIII.4.59;
(42) accent sandhi, VIII.4.66–67.

4.4.1. *The rationale of the arrangement.* – On first sight this arrangement may appear to be arbitrary, and it is on this basis that Whitney, without going into the rationale

of such an arrangement, remarked that the "brevity" has been achieved "at the cost of distinctiveness and unambiguousness".[46] He could not see the principle underlying this arrangement. Morphophonemics is not concerned merely with the sandhi of two adjacent sound units; it operates on two morphemic units in sandhi, and so it has a wider range than what was included under euphonic combination. It must be made clear at this point what a morphophoneme is. A morphophomeme is represented by one or more than one phonemes, as is the case with the morphophonemes //n// //s// //rU//, etc., which have more than one phonemic representation. A phoneme, too, which is the ultimate point in Pāṇini's analysis is not a sound-unit, it is a *varṇa-kula* (a whole family of sounds) as interpreted by Allen,[47] a conception close to the modern one based on significant contrast, complementary distribution, and phonetic similarity.[48]

Pāṇini did go beyond *varṇa*, as he included *visarjanīya (ḥ)*, *anusvāra (ṃ)* and gemination[49] in his ultimate chapter, the phonemic entity of which could not be defended even on the ground of either congruity of pattern, as could be done to some extent in the case of *ḷ* and *ñ*.[50] It shows that, though allophony in the modern sense was not comprehensively dealt with by him, he was fully awake to the most apparent differentiation of the allophones. One of the reasons why he did not go into the phonetic details of Sanskrit allophony was that comprehensive work had been done in the Śikṣā-manuals, as ably shown by W. S. Allen in his *Phonetics in Ancient India*. The other reason probably was that Pāṇini was more concerned with the structual relevance of segmentation of speech. So he confined himself to that ultimate differentiation that could be defined in the terms of sememic, morphemic, morphophomemic or phonemic entities. The *visarjanīya* etc. referred to above occur in a defined range alternating with phonemic entities in another defined range. The relevance of the phonetic data preserved in the Śikṣā-manuals is undeniably great for a diachronic study, as ably pointed out by Dr. Siddeshwar Varma in his *Critical Studies in the Phonetic Observations of Indian Grammarians*. Pāṇini's treatment of sandhi is different from that of Whitney in these respects:

(1) Whitney is concerned mainly with euphony and not with total Sandhi;

(2) Whitney does not take into account the semimorphological conditioning of morphophonemic alternation;

(3) Whitney has an uneconomical and repetitive pattern of formulation of rules. The gradual awakening of faith in the Pāṇinian technique led Emeneau to realize that

[46] W. D. Whitney, *Sanskrit Grammar*, p. xiii: "Introduction".

[47] W. S. Allen, *Phonetics in Ancient India*, p. 9: "It thus become evident that varṇa primarily denoted not a sound unit but a more comprehensive sound - quality (in fact always a vowel quality): as Patañjali expresses it, it is a generic term comprehending a whole family of sounds."

[48] See, for details, the analytical technique prescribed by Bernard Bloch and George L. Trager in their *Outlines of Linguistic Analysis*, p. 40-41.

[49] A.VIII.2-4.

[50] See, for detailed discussion, Emeneau, "The Nasal Phonemes of Sanskrit", *Language*, XXII, and A. H. Fry, "A phonemic interpretation of *visarga*", *Language*, XVII 1.94.

it is the technique of Pāṇini which has come to be accepted more and more, that of the Neogrammarians, like Whitney, discarded gradually.[51] Emeneau's lucid treatment of sandhi as an excercise book for beginners may not be comprehensive, but it lays down a foundation for an ordered treatment of sandhi. M. Halle has suggested a change in the order of Emeneau's rules, following the transformational technique.[52] Here it may be pointed out that, however complicated the order of Pāṇini's rules may appear, they are so comprehensive that we have together all the possible variations under similar patterns, e.g.: the thematic *a* before *anti* (third person singular primary ending) is covered by *guṇa* sandhi (A.VI.1.1) as an anticipatory supercession over the *dīrgha* sandhi (VI.1.101). The most recent and valuable book on sandhi by Allen, though in scope as limited as the earlier treatment of sandhi by Western scholars, is noteworthy for the reason that it combines two types of presumptions of (1) historical processes and (2) purely descriptive secondary derivational processes.[53] Moreover, it adopts to a great extent the Pāninian technique of intermediary levels, by introducing four cases of each letter,[54] viz.:

lower case italic: attested sandhi alternants,
lower case roman: reconstructed sandhi alternants,
capital italic: basic forms for attested language,
capital roman: basis forms for reconstructed language.

Pāṇini's intermediary levels are:

(1) the abstract morphemic shape such as *gam Ḷ*,

(2) the abstract phonemic shape such as *'JH' (ant)* or *Ṇ(n)*,

(3) the alternable phonemic shape such as *s*, *n*, etc.

His grammar, as emphatically asserted before, is not a process grammar. It is a combination of process and item arrangement grammars and the order of the rules is very pertinent. Its rationale can be summed up as follows:

(1) Internal sandhi precedes external sandhi between two *padas*, and the latter precedes external sandhi at the sentence level, because it facilitates the joining-up of the segments constituent-wise,

(2) Reduplication and reduction precede vowel sandhi, and the latter precedes accent because the reverse operation would need a more complicated set of rules,

(3) Vowel sandhi precedes the consonant sandhi as vowel, as an intervening or non-intervening element is an important factor in that sandhi,

(4) Similarly *ṣ* ~ *s* precedes *ṇ* ~ *n*, as *ṣ* is a factor in *ṇ* ~ *n* alternation,

(5) Stem and suffix allomorphy is placed in between vowel and external sandhi rules, because vowel is one of the factors in combination within a pada, while the latter rules operate after the combination has been formed.

The beauty of Pāṇini's treatment of sandhi lies in

[51] Emeneau, *Sanskrit Sandhi*, "Introduction".
[52] M. Halle, "Sanskrit Vowel Sandhi" (a private communication).
[53] W. S. Allen, *Sandhi*, p. 25.
[54] *Ibid.*, p. 33.

(1) framing of rewriting rules in order to maintain a uniformity of structure,

(2) gradual uncovering of the levels, so that a well-defined hierarchy is shown to be necessary in a linguistic analysis,

(3) arranging the rules in a way so that the immediate constituents are built up, viz. by starting with stem alternation, going into the accent pattern of the stem and then building up a compound stem, then dealing with derivative and inflectional build-up of a word, and culminating at a phrase-structure followed by a sentence accent pattern or sentence terminal boundary,

(4) combining the phonological as well as semimorphological conditions of alternation into one whole.

4.5. CONCLUSIONS

It is thus obvious that, if a genuine reconstruction of the *Aṣṭādhyāyī* in the terms of modern symbology for visual purposes is attempted, it would be worthwhile, as it would do away with the following difficulties that make the grammar unusable even with the aid of commentaries:

(1) the anamolous morphophonemics operating on the classifiers,

(2) the marking of classifiers by accent marks or nasalization not attested by the recorded tradition,

(3) the inflection of the forms serving as designation of terms or abstractions of morphemes (though consistently in masculine singular),

(4) the intervening vowels for the sake of convenience in memorization,

(5) the chain technique linking some times even unrelated rules for the sake of economy. At the same time it must be borne in mind that such a reconstruction should interfere with the order of the A. only when it is absolutely necessary and this should be divided into blocks and sub-blocks, so that preceding or following environment or the operation under description is easily recognized through column entries. It has been shown in the present study that such a rendering is possible, and that the ground for a wholly artificial and unsystematic order[55] is easily detectable if one looks at the grammar from the point of view of structural consistency and correlatedness. Pāṇini has shown that the language under description and the language of description differ fundamentally in certain respects, so that the *upadeśa* is an unreal abstraction of the reality. Such a mathematical language of description could be achieved in the 5th century B.C. in India, because "generation of such labor had preceded the writing of this treatise".[56] This can serve as a mathematical model par excellence with some modifications for the descriptions of other languages as well.

[55] Betty Shefts, *Grammatical Method in Pāṇini*, p. 2 quoting Whitney: "Chance itself, if they had been thrown together in a hat, could not more successfully have sundered what belongs together, and juxtaposed the discordant;... The 'Classes' or 'conjugation-classes' as laid down by Hindu Grammarians ... are arranged by the latter in a certain wholly artificial and unsystematic order (the ground of which has never been discovered)."

[56] L. Bloomfield, *Language*, p. 11.

INDEX 1A

1. *a-L* = any phoneme
   (gen.) I.1.52 (of final), I.1.54 (of initial)
   (nom.) I.1.55
   (comp.) *an-aLvidhau* I.1.56
   anekāL-(polyphonemic) I.1.54
   ekāL (monophonemic) I.2.41 unit.

2. *a-Ś* (= a voiced phoneme)
   as following environment:
   as (loc./sing.) VIII.3.17, VIII.3.18–20 (gr)

3. *a-M* (a continuant)
   a-Mpare (as following environment to these immediately conditioning environments):
   (a) *kha-Yi* VIII.3.6
   (b) (i) *cha Vi* * VIII.3.7
   (ii) (Vedic *Ṛk* only) * VIII.3.8

4. *a-Ṇ*$_2$ (a vowel or a semi vowel plus *h*)
   (1) element under operation:
   a-Ṇah (gen. I) short ~ long VII.4.13
   long ~ short VI.3.111
   nasalized ~ non-nasalized
   optionally VIII.4.57
   (2) classifier for definition:
   a-Ṇ$_1$ (nom. sing.) r ~ ṛ I.1.51

5. *a-Ṭ* (= a vowel or a semi-vowel but not including *l* + *h*) (comp.) *aṬ vyavaye* (as intervening)
   (1) between *r*, *ṣ* and *ṇ*, a condition for *ṇ*~*n*
   (as preceding environment for:) VIII.4.2, * VIII.4.3–39
   (2) *ṣ* ~ s VIII.3.63, VIII.3.71, VIII.3.119 *(chand)*.

(as following environment for:)
(loc./sing.) (i) $\tilde{a} \sim \bar{a}$ VIII.3.3 (ii) $\bar{a} \sim n$ replaced by *ru (chand.)* VIII.3.9

6. *a-C* as preceding environment:
(loc.) (1) VIII.4.29 *(ṇ ~ n)*
(loc.) (2) VIII.4.46 * 47–49 * 50–52 (gr.)
as following environment:
loc. I.1.59
loc. VI.1.77 (Vowel sandhi) *78, *87, *90, *101
loc. VI.1.125 (Hiatus) * 126–127 (ch. gr.)
loc. VI.1.134 (Zero ~ *s*)
loc. VI.4.77 (*iyaṄ, uvaṄ* substitute) * 78–93
loc. VIII.3.32 (Nasal Sandhi)
loc. VIII.4.47 * 48, 49 *(an-)*
as classifier of syllabical units:
(a) monosyllabic *(ekāC)*
(1) (nom.) I.1.14 *(Nipāta)*
(2) abl. III.1.22 (Verbal stem)
(3) abl. VI.1.1 (Verbal stem in reduplication) * 2–3
(4) abl. VI.1.168 (Accent shift) * 169 stem
(5) abl. VI.3.68 (*am* aug.) stem
(6) nom. *(bha)* VI.4.163 (stem allomorphy)
(7) abl. (stem) VII.2.10 (*iṬ* aug.)
(8) gen. Verbal stem VII.2.67 (*iT* aug.)
(9) loc. Compound stem with monosyllabic second member VIII.4.12
(b) disyllabic *(dvyaC)*
(1) abl. Suffix IV.1.121 *(aK)*
(2) abl. Secondary nonverbal stem IV.1.156 *('PH'iÑ)*
(3) abl. — IV.1.113 (dialect eastern)
(4) abl. — IV.3.72 *('TH'ak)*
(5) abl. — IV.3.150 *(maya Ṭ) (chand)*
(6) abl. — V.1.39 *(ya T)*
(7) abl. — VI.1.205 (accent shift)
(8) nom. — VI.2.90 (—)
(9) nom. — VI.2.119 *(chand)*
(10) nom. — VI.2.194 (compound)
(11) abl. a finite verb from (lengthening) VI.4.135 *(Ṛk. chand)* * 136

Trisyllabic *(tryaC)*
(1) (nom.) VI.2.90 (non-verbal stem-accent shift)
having fewer syllables *(alpā C)*: II.2.34 (in compound)
Polysyllabic (bahva C):

(1) abl. non-verbal stem IV.1.56
(2) abl. constituents IV.2.72 * 73 (northern dialect)
(3) abl. non-verbal stem IV.2.109 (northern dialect)
(4) abl. non-verbal stem IV.3.67 *('ṬH'aÑ)*
(-pūrvāt) (5) non-verbal stem IV.4.64 *('ṬH'aC)*
(6) abl. (personal name) non-verbal stem V.3.78 * 79–84
(7) abl. (personal name) (compound) VI.2.83 (accent shift)
(8) abl. *(anekāC)* — VI.3.43 (shortening of stem vowel)
(9) abl. *(bahva C)* — VI.3.119 (stem vowel lenthening)
(10) abl. *(aneke C)* verbal stem VI.4.82 (stem allomorphy)
as classifier, by being initial of:
(1) (loc.) a suffix for *(bha)* definition I.4.18
(2) (comp.) a member of compound II.2.33
(3) (loc.) a suffix after *yaṄ* II.4.74
(4) (loc.) a suffix (secondary family) IV.1.89 * 90–91
(5) (nom.) a suffix comparative V.3.58 * 59–65
(6) (loc.) a secondary suffix VI.1.62 *(śīrṣ* or *śiras)*
(6) (nom.) a declensional suffix VI.1.173 * 174–175
(7) (loc.) a second member in compound VI.3.10 (stem alternation)
(8) (loc.) a suffix (for *yUṬ* aug.) VI.4.63
(9) (gen.) a stem verbal (accent *āṬ* aug.) VI.4.72
(10) (loc.) a suffix (for *nUM* aug.) VII.1.61
(11) (loc.) a declensional suffix VII.1.73
(12) (loc.) — VII.1.97
(13) (loc.) — VII.2.89 (stem allomorphy)
(14) (loc.) — VII.2.100 —
(15) (loc.) (inflectional) suffix VII.3.72 (suffix allomorphy)
(16) (loc.) verbal suffix VII.3.87
(17) (loc.) verbal suffix VIII.2.21
as classifier by being final of:
(1) abl. a verbal stem before *CLI* (III.1.62)
(2) abl. — before *yaT* (III.1.97)
(3) abl. a verbal stem in list (accent shift) (VI.1.195)
(4) abl. a stem (*mUM* aug.) (VI.3.67)
(5) abl. a stem (*nuM* aug.) (VII.1.72)
(6) abl. a verbal stem (*iṬ* aug.) (VII.2.61)
(7) abl. a preverb (*am* substitute) (VII.4.47)
as classifier in definition:
(1) *a-C, h-L* (Nom.) I.1.10
(2) (gen.) after the last amongst *a-C* I.1.47
(3) (a) (comp.) operation of *(vidhi)* I.1.57 * 58
(b) (gen.) of (*ṭ i*, final segment) I.1.64

(4) (gen.) of (*vṛddhi*) lengthened stem I.1.73
(5) (nom.) *a-C* has 3 moras I.2.27
(6) (gen.) has 3 pitch accents I.2.28 * 28–40
(7) (nom.) of classifier symbol *(it)* when it is nasal I.3.2
as element under operation:
(1) *(vṛddhi)* lengthening ~*a-C* VII.2.3
(2) — VII.2.115
(3) lengthening – the first *a-C* VIII.2.117
before secondary suffix * VII.2.117–118 * VII.3.1–32

7. *a-K* (a vowel which has a short ~ long contrast)
as classifier: (comp.) *-lopi* VII.4.2
as element under operation:
(gen.) long *a-K* [*a-K* [*a-K* VI.1.101 * VI.1.102–105, 10) * VI.1.106 *(chand.)* * VI.1.107, VI.1.128 (gr.)

8. *a-Ṇ*$_1$ (= *a, i, u*)
1. (gen. sing.) as element under operation:
every *a-Ṇ*$_1$ is optionally replacable by a nazalized counterpart.
before pause: VIII.4.57
2. as classifier for definition:
nom. sing. *a-Ṇ*$_1$ stands for its homorganic I.1.69

9. *i-Ṇ*$_2$ *(a-Ṇ*$_2$ excluding *a)*
(1) as preceding environment:
(abl. sing.) *(i Ṇ aḥ)* after *i-Ṇ)* (i) *s*~*visarga (ḥ)* VIII.3.39
(abl. comp.) *(iṆ-koḥ)* (ii) *ṣ* ~ *s*
VIII.3.57 * VIII.3.58–119 (VIII.3.75 dial., VIII.3.104 *Yajurveda* VIII.3.105–107 *chand.*, VIII.3.119 *chand.*)

10. *i-C* (any vowel excluding *a*)
(i) as following environment:
(loc. sing.) before *i-C*
long *a* does not ~ *a* VI.1.104 * VI.1.106 *(chand)*
(ii) as determiner:
(a) as initial of *(ijaḥ)* gen. III.1.36
as initial *(ijādeḥ)* abl. VIII.4.32
(b) as penultimate of *(ijupadhāt)* abe, VIII.4.31
(c) as final of a stem (*am* aug.) VI.3.68

11. *i-K (i u ṛ ḷ)*
as element under operation:
iKaḥ (gen. sing.) in place of long *i-K*, short *i-K* VI.1.127 (gr.)

in compound: VI.3.121, VI.3.123 * VI.3.124
Vedic, VI.3.134
in sandhi as word penultimate: VIII.2.76 * VIII.2.77–78
iKaḥ (gen. sing.) in place of *i-K*
Rule of application of *guṇa vṛddhi* I.1.3 * I.1.4–5
y-Ṇ$_2$ ~ *i-K* VI.1.77
short *i-K* ~ long *i-K* (gr.) VI.3.61
as determiner:
iK (nom. sing.) -definition:
iK ~ *y-Ṇ* as reduction I.1.45
i-K ~ *e-C* I.1.48
iKaḥ (nom. pl.) are *hiatused.* VI.1.127
iKaḥ (gen. sing.) ending in *i-k* (*K* class definition) I.2.9 * 1.2.10
iK (upadhā) having *i-k* as penultimate suffixation III.1.135
iK (-antāt) having *i-K* as final segment suffixation V.1.131
iK (-anta) accent in compound VI.2.29 * VI.2.30–31
* *iK (antam)* (gr.) VII.1.74

12. *u-K (u ṛ ḷ)*
(1) *u-K (it)* as classifier of:
(i) as non-verbal stem class taking *nUM* in declension VII.1.70
(ii) *Ṅīp* distribution class IV.1.6
(iii) VI.3.45 *-gha* class (short V. ~ long V.)
(2) *u-K* (final) as classifier of:
yaT distribution class V.1.2

13. *e-C (e o ai au)*
as element under operation:
e-Caḥ (gen. sing.) in place of *e-C*
i-K ~ *e-C* I.1.48
ay etc. ~ *e-C* VI.1.78 * VI.1.79–83
āi, āu ~ *e-C* VIII.2.107 * VIII.2.108
as determiner:
e-C (anta) kṛt (SBVD) ending in is indeclinable
e-C (aḥ)
e-C has *ā*~*e-C* VI.1.45 and in other VI.1.46–57
e-C as following environment:
loc. sing. (before *e-C*)
lengthened grade ~*a, ā* + *e-C* VI.1.188 * VI.1.89

14. *e-Ṅ (e o)*
as determiner:
(1) defined as *guṇa* (strong grade) I.1.2

(2) makes a stem *vṛddha* if is the final vowel I.1.75 (eastern dialect)
as preceding environment:
e-Ṅ (Compound) after *e-Ṅ Ø* ~ *h-L* VI.1.69
e-Ṅi (loc. sing.)
before *e-Ṅ* VI.1.94
after *e-Ṅ* VI.1.109 * VI.1.110 * Vedic VI.1.115–122

15. *ai-C (ai, au)*
nom. sing. (defined) as:
vṛddhi I.1.1
ai-C~*ā* (secondary suffixation) VII.3.3
ai-C makes its component *i, u*, supralong VIII.2.106

16. *h-L* (a consonant)
as preceding environment:
haLaḥ (ablative sing.), after *h-L ŚānaC* ~ *Śnā* III.1.83
haL pūrvāt after *h-L*
accented *y-Ṇ* gets an accented case-ending VI.1.174 * VI.1.175
h-L-
haLaḥ (uttarasya) VI.4.2
haLaḥ VI.4.49 * VI.4.50
haLaḥ Ø~*y* (of secondary suffix) VI.4.150 * VI.4.151–152
haLaḥ VIII.4.64
as following environment:
haLi (loc. sing.) before *h-L*
Ø~*sU* (of *etat* and *tat*) VI.1.132 * Vedic VI.1.133
Ø~penultimate (Vedic) VI.4.100 * VI.4.101
ī~*ā* (of *Śnā*) VI.4.113 * VI.4.114–116
haLi (vibhaktau) VII.2.85, VII.2.113
haLi VIII.2.77 * VIII.2.78
haLi VIII.3.22 * VIII.3.23
haLaḥ (nom. plural) in definition
unintercepted *h-L* cluster I.1.7
a-C and *h-L* cannot be homorganic I.1.10
final *h-L* as classifier *(it)* I.3.3 * I.3.4
as determiner:
stem-ending in *h-L* have their nasal penultimate replaced by Ø VI.4.24
haL (antasya) VII.2.3
exception * VII.2.4
haL (ādeḥ) VII.2.7
haL (ādiḥ) śeṣaḥ VII.4.60
haLaḥ (haLādiḥ) VIII.4.31 * VIII.4.32

classifier of *K* class I.2.10 * I.2.11
as initial of *K* class I.2.26
as final for denominative III.1.12
as initial for iterative III.1.22
as final for *kṛt*, *Ṇyat* III.1.124
as initial for *yuC* III.2.149
as final for *a* III.3.103
as final for *GHaÑ* III.3.121
as final for stem not taking zero for VII case-ending in compound VI.3.9, as initial for non-zero allomorphy of case-ending in compound VI.3.10 (eastern dialect)
as under operation:
substituted by VI.1.68 * VI.1.69

17. *h-Ś* (a voiced consonant)
as following environment:
haŚi (loc. sing.) VI.1.114

18. *y-R* (a consonant other than *h*)
element under operation:
yaRaḥ (gen. sing.) VIII.4.45 * VIII.4.46–47

19. *y-Y* (a non-fricative consonant)
as following environment:
yaYi (loc. sing.)
N-M VIII.4.58
optionally * VIII.4.59

20. *y-Ñ*
as following environment:
yaÑi (loc. sing.)
-ā ~ *-a* before *y-Ñ (suP)* or *sārvadhātuka* VII.3.101-102

21. *y-M* (a resonant)
as element under operation:
yaMāṃ (gen. pl.) VIII.4.64
as following environment:
y aMi (loc. sing.) VIII.4.64

22. *y-Ṇ*$_2$ *(y v r l)*
as element under operation:
yaṆaḥ (gen. sing.) *i-K* ~ *y-Ṇ* as reduction I.1.45

y-Ṇ (nom.) as replacement for
y-Ṇ ~ *i-K* VI.1.27, VI.4.81 * VI.4.82–85, 87
Vedic VI.4.86
y-Ṇ segment before comparative suffixes VI.4.156
as determiner:
yaṆvataḥ VIII.2.43
as preceding environment:
yaṆaḥ (ablative sing.) VI.1.174 * VI.1.175

23. *v-L*
as following environment:
vaLi (loc. sing.) VI.1.66
as classifier:
vaLādeḥ (dhātoḥ) VII.2.35 * VII.2.36 * VII.2.44–46, * VII.2.76

24. *r-L*
as classifier:
(gen. sing.) *raLaḥ (raLantasya)*
Class-determiner of stem I.2.26

25. *v-Ś*
vaŚi (kṛti)
Class determiner of *kṛt* suffix VII.2.8

26. *m-Y*
as preceding environment:
maYaḥ (abl. sing.) *(v~vuÑ)* VIII.3.33

27. *ṅ-M*
ablative singular ~ as preceding environment:
ṅṅ~ṅ VIII.3.32
as classifier:
ṅaMuṬ VIII.3.33

28. *jh-L* (a nonresonant)
jh-L as classifier:
(i) of verbal suffix I.2.9 * I.2.10–13
(ii) of verbal suffix of non *K.* class
having *aM* augment VI.1.58
after same * VI.1.59
(iii) *jhaL (vibhakti)* VI.1.183
not acute * VI.1.184–185

(iv) *jhaLi*
nUM before a *jh-L* beginning suffix
after *masji naśi* VII.1.60

(v) *jhaLi (bahuvacane)* plural suffix
e T~a (VII.3.103)
classifier *(vibhaktau)*

(vi) accent shift on the penultimate VI.1.180
after *ṣaṭ, tri* * VI.1.181

(vii) long vowel ~ short vowel before nasal VI.4.15, * VI.4.16–21
jhaLi (jhaLādau)

(viii) Ø~nasal before *a-Ṅ* or *K* class suffix VI.4.37

(ix) *jhaloh* (*saN* beginning with *jh-L*)
ā~an of *jan san khan* before *jhal* VI.4.42

(x) *jhaLbhyaḥ* (*dhātu* ending in *jh-L*) VI.4.101
dhi~hi (imperative II pers. sing.)

(xi) *jha-L* as classifier of element ending in *nUM* augment with neuter VII.1.72
after *jh-L* (abl. sing.)

(xii) *Zero~s* after + before *jh-L* VIII.2.26
before *jh-L* (loc. sing.)
the same as (xi) VIII.2.28

(xiii) zero, *cU, kU, ḍh~h* * VIII.2.30–37
gh~h, dh~h, th~h } alternations
ṣ~ch, bh-Ṣ~b-Ś }

(xiv) as element under operation:
jh-L (gen. pl.) *j - Ś~jh-L* before final pause VIII.2.39
jh-L (gen. pl.) *j-Ś ~ jh-L* before *jh-Ś* VIII.4.53
c-R ~ jh-L in reduplication VIII.4.54 *
c-R ~ jh-L before *kh-R* VIII.4.55 *
c-R ~ jh-L before final pause VIII.4.56 * optionally

29. *jh-R* (all the stops and fricatives except *h*) after *jh-R* (gen. and loc. sing.) and as element under operation before *jh-R* homorganic *zero~jh-R* after *h-L* VIII.4.65

30. *jh-Y* (a stop)
as classifier:
(1) of an adverbal compound ending in it, *Ṭ aC* after such a stem V.4.111
(2) of a non-verbal stem ending in it *v~m* (of *mat U*) VIII.2.10 after *jh-Y*
(3) homorganic stop *~h* optionally VIII.4.62
(4) *ch- ~ ś* optionally * VIII.4.63

31. *jh-Ś* (a voiced stop)
before *jh-Ś*
j-Ś ~ jh-L VIII.4.53

32. *jh-Ṣ* (a voiced aspirated stop)
    (1) after *jh-Ṣ dh*~*t, th* (except *dhā*) VIII.2.40
    (2) as classifier of a component ending in it *bh-Ṣ* ~ *b-Ś* of such a component VIII.2.37

33. *bh-Ṣ (bh gh ḍh dh)*
    (nom. sing.)
    (i) *bh-Ṣ* ~ *b-Ś* VIII.2.37
    (ii) *bh-Ṣ* ~ *b Ś*before *t, th* VIII.2.38

34. *j-Ś* (a voiced unaspirated stop)
    (nom. sing.)
    j-Ś ~ *jh-L* before *jh-Ś* VIII.4.53
    j-Ś (*vidhi* compound)
    alternant not functioning as the radical form I.1.58

35. *b-Ś (b g ḍ d)*
    as element under operation:
    see (i) and (ii) under 33 above. VIII.2.37 and VIII.2.38 *

36. *kh-R* (a voiceless consonant)
    before *kh-R*
    (i) *visarga*~*r* VIII.3.15
    (ii) *s*~*visarga* VIII.3.34 *
    (iii) visarga~visarga after *ś-R* VIII.3.35 *
    (iv) *c-R* ~ *jh-L* VIII.4.55

37. *kh-Y* (a stop)
    (i) (nom. pl.) retained in reduplication VII.4.61
    (ii) before *kh-Y* (loc. sing.)
    rU~*m* (of *pum*) VIII.3.6

38. *ch-V (ch ṭh th c ṭ t)*
    before *ch-V*:
    (i) *rU*~*m* (a word final) before *ch-V* followed by *a-M* VIII.3.7
    (ii) optional in *Ṛgveda* * VIII.3.8

39. *c-R (c ṭ t k p)*
    (i) as classifier of *c-R* operation *(vidhi)*, alternant not functioning as the radical form I.1.58
    (ii) nom. sing.
    c-R ~ *jh-L* VIII.4.54 * VIII.4.55–56

40. *ś-L* (a fricative)
as classifier of verbal stem.
with *ś-L* as penultimate vowel:
Ksa~*CLI* (of *LU Ṅ*) III.1.45

41. *ś*-R (a sibilant)
before *ś-R*
(i) *kUK* and *tUK* aug. after *ṅ* and *ṇ* (word final) VIII.3.28
śaR para (ii) See (iii) under 38 above, VIII.3.35
as preceding condition:
saR pūrva (iii) *kh-Y* preceded by *ś-R* retained in reduplication VII.4.61
as element under operation:
(gen. sing.) (iv) no gemination before *a-C* VIII.4.49

INDEX 1B

1. *sU* ..... *P* (= all the declensional endings) defined in IV.1.2
(nom.) (-ending in *sU-P*) I.4.14 (as definition of *pada*, word)
II.1.2 (as *constituent*, *aṅga* for accent in compound and vocative)
II.1.4 (as the element compounding with other declined one)
II.1.9 (as the element compounding with *prati*)
(instr.) (ending in *sU-P*) II.1.4 see above
(abl.) (ending in (*sU-P*) III.1.8 (as preceding condition for *KyaC* denominative suffix)
* III.1.9–21 (for others) V.3.68 (as preceding condition for *bahu C* secondary deriv. suffix)
(gen.)
(a)
(as one to be replaced)
II.4.82 (is replaced by zero after an indeclinable)
VII.1.39 *(chand.)* (is replaced by diff. forms in the Vedic)
(in the possessive meaning of the gen.)
I.4.103 (the 21 members of *su-P* are arrayed numberwise)
* I.4.104 (and are called *vibhakti*, inflectual)
(b) (ending in *sU-P*) II.4.71 (has its stem and root functions realized as zero)
loc. (as following condition)
VI.1.92 (for grammarian variation in vowel sandhi)
VI.1.191 (for accent on the first syllable of *sarva*)
VI.4.83 (for *v* ~ *u*)
* VI.4.84–85, * 86 (chand.)
VII.3.102 (for lengthening of *a* when *sU-P* has it)
* VII.3.103 (initial one of the group *y-Ñ*)
VIII.1.69 (for making the *prefix* + *verb* unaccented in a derogatory sentence)
VIII.3.16 (for *ḥ* ~ *rU*)
(as the first member in a primary derivative * suffix formatum)
III.1.106 (for *KyaP* after *vad*, *bhū*, *han*) 107–108
III.2.4 (for *Ka* after *sthā*)
III.2.78 (for *ṆinI*)

(*-vidhau*, operating *sU-P*)
VIII.2.2 (Zero ~ *n* as out of the first circle of rules)

2. *sU-Ṭ* (= nom.-sing. dual and plural, and acc.-sing. and dual declensional endings)
def. IV.1.2
(nom.) I.1.43 (as definition of *sarvanāmasthāna*, strong case ending, when belonging to non-neuter stem)

3. *ti-Ṅ* (= all the conjugational endings)
def. in III.4.113
(nom.) (ending in *ti-Ṅ*) I.4.14 (as definition of word, *pada*)
III.4.113 (non-*Ś* class taking *ti-Ṅ* is full stem class)
VIII.1.28 (is unaccented) after a non-*ti-Ṅ* formation except in situations specified in VIII.1.29–66)
VIII.1.68 (is unaccented together with its preverb, *gati*)
* VIII.1.69
VIII.2.96 (is supra lengthened after *aṅga*)
VIII.2.104 (is supra lengthened to indicate blessing and command)
(abl.) (*ti-Ṅ* formation as preceding condition)
V.3.56 (for *tama*P superlative suffix)
V.4.11 (for *ām* comparative suffix)
VIII.1.27 (for words *gotra* etc. becoming unaccented)
(gen.) (as *ti-Ṅ* formation under operation)
VI.3.134 (gets elongated in *Ṛk* if it is disyllabic)
(in possessive sense)
I.4.101 (has 3 persons)
*I.4.102 (has 3 numbers)
*I.4.104 (called *vibhakti* inflectional)
ati-Ṅ (non-*ti-Ṅ*)
nom. II.2.19 (only a non *ti-Ṅ* can compound as *upapada* subsidiary to the either element)
III.1.93 (the verbal suffixes which are non-*ti-Ṅ* are called *kṛt*)
VIII.1.28 vide above under *ti-Ṅ* (nom.)

4. *ta-Ṅ* (= all the middle voice conjugational suffixes)
def. III.4.113
I.4.100 (as definition of *ātmanepada*, middle voice)

INDEX 1C

1. *kU* (= *k kh g gh ṅ*, the velar series) defined in I.1.69
   (nom.) I.3.8 (as notational symbol in nonsecondary derivational suffix formation)
   VII.3.52 (as replacement for *c, j* before *GH-* and *Ñ*-classes of suffixes)
   VIII.2.30 (as replacement for *cU* in external sandhi)
   VIII.2.62 (as replacement for the final phoneme of *-K'VI'N* formed stem)
   (abl.) VIII.3.57 (as preceding environment for *ṣ* ~ *s* replacement) * VIII.3.58–119
   (gen.) VII.4.62 (replaced by *cU* is reduplication)
   (loc.) *-pare* VI.1.120 *(chand., Yajurveda)*
   (as following environment of *a*, which is not merged in the preceding *e-Ṅ*)
   VIII.3.37 (as following environment of *ḥ, visarga,* for being replaced by a *velar fricative*), VIII.4.2

2. *cU* (= *c ch j jh ñ*, the palatal series) defined in I.1.69
   (nom.) I.3.7 (as notational symbol when initial of any *suffix*)
   VII.4.62, vide *kU* (gen.) (as replacement)
   VIII.4.40 (as replacement for *tU* when the *tU* comes into conjunction with *cU*)
   (instr.) VIII.4.40 (as that with which *tU* comes into conjunction)
   (abl.) *-antāt* (as *cU* ending stem is the preceding condition for *ṬaC* suffix at the end of a copulative compound) V.4.106
   (gen.) VIII.2.30 (as being replaced by *kU*, vide under *kU* nom.)
   (loc.) VI.1.222 (as the following condition for accentuating the final syllable of the preceding root or stem)
   VI.3.138 (as the following condition for lengthening the final vowel of the preceding root or stem)

3. *ṭU* (= *ṭ ṭh ḍ ḍh ṇ* retroflex series) def. I.1.69
   (nom.) I.3.8 (as notational symbol in non-secondary derivational suffix situation)
   VIII.4.41 (*ṭU* replaces *tU* when the later is in conjunction with *ṭU*)
   (instr.) VIII.4.41 Vide above
   (abl.) VIII.4.42 (*ṭU* does not replace *tU* when the later comes after a word final *ṭU* except in the case of *nām*)

4. *tU* (= *t th d dh n*) def I.1.69

(nom.) I.3.4 (*tU* is not an indication notation as the final of an inflectional suffix)
(gen.) VIII.4.40 see under *cU*
VIII.4.41 see under *ṭU*
*VIII.4.42 see under *ṭU*
VIII.4.43 (*tU* is not replaced by *ṭU* before *ś*)
VIII.4.44 (*tU* is not replaced by *cU* or preceded by *Ś*)

5. *pU* (= *p ph b bh m*, labial series) Def. I. 1.69
(abl.) III.1.98 (after a root ending in *pU* and having *a* as penultimate vowel *yaT* suffix is added)
VIII.4.2 *-vyavāya* see under *kU* (as a condition for *ṇ*~*n*)
(loc.) *-pare*
VII.4.80 (before a *pU* the reduplication ending in *u* has *u* replaced by *i*)
VIII.3.37 (*visarga* replaced by *p* before *pU*) see *kU*

INDEX 2A

List of suffixes marked by capital letters within inverted commas (representable phonemically)

'*KH*' (= *īn*)	gen. VII.1.2
class	'*KH'a* (nom.) IV.2.93, IV.3.64, IV.4.78–79, IV.4.130, IV.4.132–133
S B D	'*KH'aÑ* See under *Ñ* class
'*GH*' (=*iy*)	gen. VII.1.2
class	'*GH'a* (nom.) IV.1.138, IV.2.27, IV.2.29, IV.2.93, IV.4.118,
S B D	IV.4.135–136, IV.4.141, V.1.71, V.2.40
	'*GH'aC* See under *C* class
	'*GH'aN* See under *N* class
	'*GH'aS* (nom.) V.1.106
'*CH*' (= *īy*)	gen. VII.1.2
S B D	'*CH'a* (gen.) * V.2.60
	(nom.) IV.2.115, IV.2.6, IV.2.28, IV.2.48, IV.2.84, IV.2.90 * IV.2.91, IV.2.114, IV.2.137, * 138–145, IV.3.62 * 63, IV.3.88, IV.3.91, IV.3.131, IV.4.14, IV.4.117, IV.1.143, * 144, IV.1.149, V.1.1, V.1.40, V.1.69 * 70, V.1.91 (ch.) * 92, V.1.111 * 112, V.1.135, V.2.59, V.3.105, * 106, V.3.116, V.4.9 * 10
	'*CH'aṆ* See under *Ṇ* class
'*JH*'	gen. (= *ant.*) VII.1.3
	* (= *at*) VII.1.4
	* (—) VII.1.5–6
S B V I	'*JH'i* (III pl.)
	(nom.) III.4.78
	(gen.) III.4.108
'*Ṭ H*' (*ik*)	gen. VII.3.50,
	abl. (= '*Ṭ H*'-class) V.3.83 * 84
'*Ṭ H*' (= *k*)	gen. * VII.3.51
S B D	'*Ṭ H'aK* See under *K* class
	'*Ṭ H'aC* See under *C* Class
	'*Ṭ H'aÑ* See under *N* class
	'*Ṭ H'aN* See under *N* class
	'*Ṭ H'aP* See under *P* class
	Ṣ'*Ṭ H'aN* See under *N* class

	Ṣ'ṬH'aL See under *L* class
'ḌH' (= ey)	gen. VII.1.2
S B D	abl. (= *ḌH* class) IV.1.15
	'ḌH'a (nom.) IV.4.106,V.3.102
	(loc.) VII.3.28, VI.4.143
	'ḌH'aK See under *K* class
	'ḌH'akaÑ See under *Ñ* class
	'ḌH'aÑ See under *Ñ* class
	'ḌH'araK See under *K* class
	'ḌH'inuK See under *K* class
'PH' (= āyan)	gen. VII.1.2
S B D	*C'PH'aN* See under *C* class
	'PH'aK See under *K* class
	'PH'aÑ See under *Ñ* class
	'PH'iÑ See under *Ñ* class
	'PH'iN See under *N* class
	Ṣ'PH'a, Ṣ'PH'aK See under *Ṣ* + *K* classes respectively
'YU' (= ana)	gen. VII.1.1
S B V D	*KH'YU'N* See under *KH* class
	Ṇ'YU'Ṭ See under *Ṭ* class
	'YU'C See under *C* class
	L'YU' See under *L* class
	L'YU'Ṭ See under *Ṭ* class
L (= personal endings)	nom. I.4.99 (def.) VI.1.186 * 187–192
	gen. II.3.69 (*L*= present participle)
	LAṄ See under *Ṅ* class
	LAṬ See under *Ṭ* class
	LIṄ See under *Ṅ* class
	LIṬ See under *Ṭ* class
	LUṄ See under *Ṅ* class
	LUṬ See under *Ṭ* class
	LṚṄ See under *Ṅ* class
	LṚṬ See under *Ṭ* class
	LEṬ See under *Ṭ* class
	LOṬ See under *Ṭ* class
LU (= ŚLU, LUK, LUP)	
(= Zero allomorph of suffix only) (Nom.) I.1.61 (*-matā* = with a form having *LU*) I.1.63	
	LUK See under *K* class
	LUP See under *P* class
	ŚLU See under *Ś* class
'VI' (= Zero)	gen. VI.1.67

S B V D	*K'VI'* See under *K* class
	K'VI'N See under *K* class
	K'VI'P See under *K* class
	Ṇ'VI' See under *Ṇ* class
	Ṇ'VI'N See under *Ṇ* class
	'VI'C See under *C* class
	'VI'Ṭ See under *Ṭ* class
S B D → B V	*C'VI'* See under *C* class
'VU' (= aka)	gen. VII.1.1
S B V D	*Ṇ'VU'C* See under *C* class
	Ṇ'VU'L See under *Ṇ* class
	'VU'Ñ See under *Ñ* class
	'VU'N See under *N* class
	Ṣ'VU'N See under *N* class
S B D	*'VU'K* See under *K* class
	'VU'Ñ See under *Ñ* class
	'VU'N See under *N* class

INDEX 2B

Index of the non-stem suffixes, augments and substitutes classes indicated by the algebraic symbols. The order is the same as that of the Devanāgarī alphabet:

a ā i ī u ū ṛ ṝ ḷ e ai o au
k kh g gh ṅ
c ch j jh ñ
ṭ ṭh ḍ ḍh ṇ
t th d dh n
p ph b bh m
y r l v ś ṣ s h

I — *in I* (nom.) III.2.156 * 157

S B D — *Ṇin I* (nom.) III.1.134, III.2.78 * 79–83, * 85–86, III.3.170.
ĊvanIP (nom.) III.2.74 * 75, III.2.94, * 95–96
ṄvanIP III.2.103
najIṄ (nom.) III.2.172
manIN (nom.) III.2.74, 75
vanIP (nom.) III.2.74 * 75

S B I — *ṄasI* (loc.) VI.1.110, * VI.1.111–112
(nom.) IV.1.2

S B D — *ākinIC* (nom.) V.3.52
anIC V.4.124
asI (nom.) V.3.39
asIC (nom.) V.4.122, * 123 *(chand.)*
astātI (nom.) V.3.40
(nom.) V.3.44 * 45, * 46–49
imanIC V.1.122 * 123
inI (nom.) IV.3.111, IV.4.23, IV.2.11, IV.2.51, V.2.85 * 86 * 87–88, * 89–90 *(chand.)*, V.2.102, V.2.115 * 116–117, V.2.128 * 129–137
gminI (nom.) V.2.124
ṆinI (nom.) IV.3.103 * 104–106, IV.3.110
tasI (nom.) IV.3.113, IV.3.114,
(gen.) V.3.8
tasIL (nom.) V.3.7 * 8

vatI (nom.) V.1.115 * 116–118
vinI (nom.) V.2.102, V.2.121, * 122 *(chand.)*
sātI (nom.) V.4.52 * 53–55
U (*aug.*) *asUK* (nom.) VII.1.50 *(chand.)*
ānUK (nom.) IV.1.49
ithUK (nom.) V.2.53
kUK (nom.) IV.1.158 * 159, V.2.129, VIII.3.28
ṅUṬ (nom.) VIII.3.32
jUK – VII.3.38
ṭUK (nom.) VIII.3.28
tUK (nom.) VI.1.71 * 73–76, VIII.3.31
(loc.) VI.1.86
(comp.) VIII.2.2
tithUK (nom.) V.2.52
thUK VII.4.17, V.2.51
dhUṬ (see) *Ṭ* class
nUK IV.1.32 * 33–34, VII.4.85 * 86–87
nUṬ (nom.) VII.4.71 * 72, VII.1.54 55, * 56–57 *(chand.)*
(abl.) VI.1.176
nUM (gen.) VI.1.173 (comp. *-vyavāye*) VIII.4.2, VIII.3.58, III.1.173
(abl.) VIII.4.32
(nom.) VII.1.58 * 59–73 * 78–83 (80, 83 *chand.*)
pUK (nom.) VII.3.36
(determiner) VII.3.86
pUM (nom.) VII.4.19
mUK (nom.) VII.2.82
mUṬ (nom.) VIII.3.32
yUK VII.3.33–37
yāsUṬ (nom.) III.4.103
rUṬ (nom.) VII.1.6 * 7 * 8 *(chand.)*
sīyUṬ (nom.) III.4.102
ṣUK (nom.) IV.1.160$_1$
sUṬ (nom.) III.4.107, VI.1.135 * 136–157, VII.1.52
(gen.) VIII.3.70 * 71
(loc.) VIII.3.5
asUṄ (nom.) VII.1.89
vasU (nom.) VII.1.36
rU (nom.) VIII.3.1, * 2–17 VIII.2.74 * 75
(gen.) VI.1.113
S B I *sU* (nom.) IV.1.2
(loc.) VII.2.94, VII.2.110 * 111
(com.) VII.2.107

(gen.) VI.1.68
S B V D *inUṆ* III.3.44 (abl.) V.4.15 * 16
KamUL (see *K* class)
KasUN (see *K* class)
KtavatU (see *K* class)
KHamUÑ (see *KH* class)
KvasU (see *K* class)
GHinUṆ (see *GH* class)
ṆamU L (see *Ṇ* class)
tumUN III.4.65 * 66 (comp.), III.4.9 * 10–11 *(chand.)*, II.3.15, III.3.10 (future)
(case-ending) III.3.158, III.3.167
tosUN (nom.) I.1.40, III.4.13 *(chand.)*, III.4.16 *(chand.)*
S B D *añCU* (comp.) II.3.29 (case-ending)
atasUC (nom.) V.3.28 * 29
kṛtvasUC (nom.) V.4.17
ḌmatuP (nom.) IV.2.87
'ḌH'inUK (nom.) IV.3.108
thamU (nom.) V.3.24 * 25
dhamUÑ (nom.) V.3.45
matUP (nom.) V.2.94 * 95, V.2.136, VI.1.176 * 177, IV.2.72, 85* 86, IV.4.127, 128, 136
(gen.) V.3.65, VIII.2.9, VIII.3.1
vatUP (nom.) V.2.39 * 40–41, I.1.23 (determiner)
sUC (nom.) V.4.18
Ṛ
S B V D *ŚatṚ* (nom.) III.2.124 * 125–126, * 127, III.2.130, * 131–133, III.3.14 (future)
(gen.) VII.1.36, VI.1.173, VII.1.78, * 79–81
K *asUK*
aug. *kUK*
jUK
ṭUK
tUK
nUK
pUK
mUK
yUK
ṣUK
See in *U* class
nīK (nom.) VII.4.84
riK (nom.) VII.4.91 * 92

rīK (nom.) VII.4.90 * 91–92
ruK (nom.) VII.4.91 * 92
vuK (nom.) IV.1.125
saK (nom.) VII.2.73

Zero *LUK* (nom.) I.1.61, VII.3.39, IV.1.89, 90 * 91, IV.1.109, IV.1.175, VI.3.1 * 2–24, VII.1.22 * 23, VII.1.39 *(chand.)*, V.1.88 * 89, V.1.28 * 29–31, V.1.55, V.2.60, V.2.77, V.3.30, (loc.) V.4.92

S B V I *Ksa* (nom.) III.1.45 * 46–47
(gen.) VII.3.72

S B V D *Ka* (nom.) III.2.55, III.2.77, VI.2.157 * 158, III.1.135 * 136, III.1.144, III.2.3 * 4–7, III.3.41 * 42, III.3.83
(gen.) VI.2.144 (comp., accent)
KaÑ (nom.) III.2.60
Kadhyai (nom.) III.4.9 *(chand.)*
KadhyaiN (nom.) III.4.9 *(chand.)*
KaP (nom.) III.2.70
KamUL (nom.) III.4.12 *(chand.)*
KasUN (nom.) III.4.13 *(chand.)*, III.4.16 *(chand.)*, I.1.40 *(chand.* def.)
KānaC (nom.) III.2.106
Ki (nom.) III.2.171, III.3.92 * 93
Kin (nom.) III.2.171
KuraC (nom.) III.2.162
KeN (nom.) III.4.14 *(chand.)*
Kenya (nom.) III.4.14 *(chand.)*
Kta (nom.) III.4.70 * 71–72, III.2.187 * 188, I.1.26, I.2.19–22, III.2.102, III.3.114, II.2.36, II.3.67, 69, VI.1.205 * 206–208 * 209–210 *(chand.)*, VI.2.46, VI.2.110, VI.2.145 * 146–149, VI.2.170 * 171, III.3.174 (instr.) II.1.25, 39, 45, 60, II.2.12 * 13,
(loc.) VI.1.22 * 23–29, VI.2.45 * 46–50, VI.2.61, VII.2.14 * 15–34, VII.2.47, VII.2.50
(gen.) VI.1.144
(abl.) VI.2.169, V.4.4 * 5, IV.1.51, VIII.2.42 * 43–61 * 61 *(chand.)*
KtavatU (nom.) II.2.36, II.3.69, VI.1.205 * 206–208 * 209–210 *(chand.)*, I.1.26 (def.) I.2.22, VI.2.46, VI.2.110, III.2.102, I.2.19–22
(loc.) VI.1.22 * 23–29, VII.2.14 * 15–34, VII.2.47, VII.2.50
(gen.) VI.1.144
(abl.) VI.2.169, VIII.2.42 * 43–61 * 62 *(chand.)*

S B / B V→B V *KyaṄ* (nom.) III.1.11 * 12, * 14, * 15–18
KyaC (nom.) III.1.8 * 10, 19
(loc.) VII.4.33 * 34 * 35–39 *(Chand.)*
Kya (= *KyaṄ*, *KyaC*, *KyaṢ*) (nom.) III.2.170 *(chand.)*

(loc.) I.4.15
Kyaṣ (nom.) III.1.13
(gen.) I.3.90
yaK (nom.) III.1.27, III.1.67, VII.1.47, III.1.89
(loc.) VI.1.195, VII.4.28 * 29
S B V D *KtiC* (nom.) III.3.174
KtiN (nom.) VI.2.151, III.3.94 * 95 * 96–98 *(chand.)*
Ktri (nom.) III.3.88
Ktvā (nom.) II.2.22 *(chand.)*, III.4.18 * 19, 20–24, III.4.59, I.1.40, I.2.7 * 8
(loc.) VII.2.50 * 51–56, VII.4.43 * 44 *(chand.)*
(gen.) VII.1.37 * 38 *(chand.)*, VII.1.47 *(chand.)*
Knu (nom.) III.2.140
KmaraC (nom.) III.2.160
KyaP (nom.) III.1.106 * 107–108, III.1.109 * 110–122, III.3.98 * 99–100
Kru (nom.) III.2.174
KlukaN (nom.) III.2.174
KvaraP (nom.) III.2.163 * 164
(abl.) IV.1.15
KvaniP (nom.) III.2.74 *(chand.)* * 75, III.2.94, * 95–96
KvasU (nom.) III.2.107 *(chand.)* 108–109
K'VI'N (nom.) III.2.58 * 59–60
(gen.) VIII.2.62
K'VI'P (nom.) III.2.76 * 77, III.2.87 * 88 *(chand.)*, III.2.177 * 178–179, III.2.61
K'VI' (= *K'VI'*, *K'VI'N*) III.2.134
Kse (nom.) III.4.9 *(chand.)*
KseN (nom.) III.4.9 *(chand.)*
Ksnu (nom.) III.2.139
ṬaK (nom.) III.2.52 * 53–54
S B D *āraK* (nom.) IV.1.130 * 131
īkaK (nom.) V.3.110, IV.4.59
airaK (nom.) IV.1.128
kaK (nom.) IV.4.21
'ṬH'aK (nom.) IV.2.2, 18, 22, 47, 60, 63, 84, 102, 115, IV.2.18, 40, 72, 75, 96, 124, IV.4.1 * 3, 5, 8, 12, 15, 17, 22, 24, 26, 30, 32–43, 50–57, 55, 57–58, 60–61, IV.4.63, 65–66, 69, 71–73, 81, 102, IV.1.146 * 147–149, V.1.19 * * 20, V.4.13, IV.4.34 * 35
(abl.) IV.1.15
'ḌH'aK (nom.) IV.1.119, IV.1.120 * 121–127, IV.1.142, V.1.127, V.2.2, IV.2.8, 33, 97

(loc.) IV.1.133 * 134
'ḌH'raK (nom.) IV.1.129
'DH'inUK (nom.) IV.3.109
'PH'aK (nom.) IV.1.91, 99
yaK (nom.) V.1.128, IV.3.94
vuK (nom.) IV.2.103
Ṣ'PH'aK (nom.) IV.2.99 * 100

KH
S B V D
KHa (nom.) III.2.83
KHaC (nom.) III.2.38 * III.2.39–47
KHamUÑ (nom.) III.4.25
KHaL (nom.) III.3.126 * 127, III.4.70
(*-artha* comp.) II.3.69
(loc.) VII.1.67 * 68
KHaŚ (nom.) III.2.28 * III.2.29–37
KHiṣṇuC (nom.) III.2.57
KHukaÑ (nom.) III.2.57
KH'YU'N (nom.) III.2.56

GH
S B V D
GHa (nom.) III.2.70, III.3.118 * 119, III.3.125
(loc.) VI.3.17
GHaÑ (nom.) III.3.16 * 17 * 18–40 * 45–55, III.3.120 * 121–125
(loc.) II.4.38, II.4.56, VI.1.47, VI.1.159, VII.1.67 * 68
(gen.) VI.2.144
GHinUṆ (nom.) III.2.141 * III.2.142–145
GHuraC (nom.) III.2.161

Ṅ
augment
anaṄ (nom.) V.4.131 * 132–133, VII.1.75 * 76 *(chand.)*
ānaṄ (nom.) VI.3.25 * 26
inaṄ (nom.) IV.1.126 * 127
substitute
anaṄ (nom.) VII.1.93 * 94
ayaṄ (nom.) VII.4.22
avaṄ (nom.) VI.1.123 (gr.) * VI.1.124
asUṄ (nom.) VII.1.89
iyaṄ (nom.) I.4.4.
uvaṄ (nom.) I.4.4
riṄ (nom.) VII.4.28
rīṄ (nom.) VII.4.27
S B V I
ta-Ṅ see under Index I B
ti-Ṅ — — —
mahiṄ (nom.) III.4.78

LAṄ (nom.) III.2.111, 116 * 117, III.3.176, III.4.6 *(chand.)*
(loc.) III.4.111, VI.4.71
LIṄ (nom.) I.2.11 * 12–13 (def.), III.3.9, III.3.134, 139 * 140, III.3.143, 144, * 145, 147 * 148–150, III.3.152 * 153–157, III.1.86 (benedict) III.3.157, III.3.159 * 160, III.3.161, III.3.164, III.3.168 * 169, III.3.173
(loc.) II.4.42, VII.4.24, VII.4.28 * 29, III.4.102 * 103–110, III.4.115, VII.2.39, 42 * 43
(-arthe) (comp.) VI.4.7 *(chand.)*, VI.1.29
LUṄ (nom.) III.2.110, 122, III.3.175 * 176, III.4.6 *(chand.)*
(loc.) I.3.61, I.3.91, II.4.43 * 44, III.1.43 * 44–66
(gen.) VIII.3.78 * 79
LṚN (nom.) III.3.139 * 140–141
(loc.) II.3.50; III.1.33, VI.4.71

S B V D→B V *aṄ* (nom.) III.1.52 * 53–59, III.1.86
(loc.) VII.4.16 * 17–20
KyaṄ (see under *K* class)
CaṄ (nom.) III.1.48 * 49, * 50–51 *(chand.)* VI.1.11, VI.1.18, VI.1.218
II.4.51, VII.3.56, VII.4.1 * 2–8, VII.4.8 *(chand.)* VI.1.31 * 32 (*-pare* comp.) VII.4.93 * 94–97
ṆiṄ (nom.) III.1.20, 30
yaṄ (nom.) III.1.22 * 23–24
(abl.) III.2.166, III.2.176, IV.1.74, VII.3.94
(gen.) II.4.74, VI.1.9
(loc.) VII.4.30 * VII.4.31, VII.4.82 * VII.4.83–88, VIII.2.20, VI.1.29 * 30, VI.1.19 * 20–21

S B V D *aṄ* (nom.) III.3.104 * 105–106
ṄvanIP (nom.) III.2.10
naṄ (nom.) III.3.90

S B I *auṄ* (= *au* nom. dual to distinguish from *auṬ* accus. dual)
(gen.) VII.1.18 * 19
Ṅas (nom.) IV.1.2
(gen.) VII.1.12
ṄasI (nom.) IV.1.2
(gen.) VII.1.12, VII.1.15 * 16
(loc.) VI.1.110 * 111–112
Ṅi (nom.) IV.1.2
(gen.) VII.1.15 * 16, VII.3.116 * 117–119
(loc.) VII.3.110
Ṅe (nom.) IV.1.2
(gen.) VII.1.13 * 14

(loc.) VII.2.95, VI.1.212
S B D *uṄ* (nom.) IV.1.66 * 67–71 * 72 *(chand.)*
(fem.) (gen.) VI.1.175
Ṅī (=*ṄīN*, *ṄīP*, *ṄīṢ)* (abl.) IV.1.1, VI.1.68, VI.1.178 *(chand.)*
(fem.)*ṄīN* (nom.) IV.1.73
ṄīP (nom.) IV.1.5 * 6–8, IV.1.15 * 20–21, IV.1.26 * 27–39, IV.1.60
ṄīṢ (nom.) IV.1.17 (gr.) * 18–19 (gr.), IV.1.25, IV.1.40, * 41–43 (gr.) * IV.1.44–46, 59 *(chand.)* * IV.I.47–58, IV.1.61–64
akaṄ (nom.) IV.1.97
ÑyaṄ (nom.) IV.1.171
niṄ (nom.) V.4.134
ṢyaṄ (nom.) IV.1.78 * 79–81, V.1.123 * 124
(gen.) VI.1.13 * 14
C
S B V I *ireC* (nom.) III.4.81
S B V D → B V *KyaC* III.1.8, III.1.10–19
CaṄ (nom.) see *Ṅ* Class
CiṆ (nom.) III.1.60 * 61–66
(loc.) VII.1.69, VII.3.85
CkāmyaC (nom.) III.1.9
CLI (nom.) III.1.9 43 * 44–66
C'VI' (nom.) = enduring I.4.61 (defin.) (nom.) III.1.12, III.2.56
ṆiC (nom.) III.1.21, 25, 26
siC (nom.) I.2.11 * 12–17, III.1.44
(abl.) VII.3.96 * 97 *(chand.)*
(loc.) VII.2.40 * 41, 42 * 43, *(a-)* VII.2.57, 71, * 72–73, VII.2.1 * 2–7
(gen.) II.4.77 * 78–79
S B V D *aC* (nom.) III.1.134 * 42, III.2.9 * 10–15, III.3.56, VI.2.157 * 158 (ending in)
(gen.) (-ending in) VI.2.144
athuC (nom.) III.3.89
āluC (nom.) III.2.158
iṣṇuC (nom.) III.2.136 * 137–138 (-ending in) VI.2.160
KānaC See *K* class
KuraC See *K* class
KtiC —
KmaraC —
KHaC See *KH* class
KHiṣṇuC —
GHuraC See *GH* class
CānaŚ (nom.) III.2.129
ṆaC (nom.) III.3.43

(abl.) V.4.14
Ṇ'VU'C (nom.) III.3.111
tṛC (nom.) III.1.133, III.3.169
(ins) II.2.15 * 16–17
(*-vat*, as in *tṛC*) VII.1.95 * 96–97
'YU'C (nom.) III.2.148 * 149–151, * 152–153
III.3.107, 128 * 129–130
varaC (nom.) III.2.175 * 176
'VI'C (nom.) III.2.73 *(chand.)*
(loc.) VII.3.85
ṣānaC (nom.) III.1.83, III.2.124 * 125–126, III.3.14, III.2.127
Śāyac (nom.) III.1.84 *(chand.)*

S B I — *yāC* VII.1.39 *(chand.)*

substitute — *ayaC* V.2.43 * 44

oraugment — *anIC* See *I* class
asIC See *I* class
ākinIC See *I* class

S B D → B (fem.) — *CāP* IV.1.74 * 75

S B D — *akaC* (nom.) V.3.71
aC (nom.) V.4.75 * 76 * 77–87, V.4.118 * 119–121, V.2.127
atasUC See *U* class
aṭhaC (nom.) V.2.35
aḍaC (nom.) V.3.80 (dial.)
āc (nom.) V.3.36 * 37–38
loc. *(-uttarapade)* II.3.29
āṭaC (nom.) V.2.125
ālaC (nom.) V.2.125
iC (nom.) V.4.127 * 128
itaC (nom.) V.2.36
inaC (nom.) V.2.33
imanIC (nom.) See *I* class
ilaC (nom.) V.2.99 * 100, V.2.105, V.2.117, V.3.79 * 80 (dial.)
īraC (nom.) V.2.111
uraC (nom.) V.2.106
edhaC (nom.) V.3.46
kaṭaC (nom.) V.2.29 * 30
kaṭyaC (nom.) IV.2.51
kuṭāraC (nom.) V.2.30
kṛtvasUC (nom.) See in *U* class
'GH'aC (nom.) V.2.92 * 93, IV.4.117 * 118
C'PH'aÑ (abl.) V.3.113, (nom.) IV.1.98
C'VI' (nom.) V.4.50 * 51–52

(loc.) VII.4.26 * 27, VII.4.32
jāhaC (nom.) V.2.24
ṬaC (nom.) V.4.91 * 92–112 * 113 *(Chand.)*
ṬīṭaC (nom.) V.2.31
'ṬH'aC (nom.) V.3.78 * 79–80, IV.4.64
ḌaC (nom.) V.4.73
ḌāC (nom.) V.4.57 * 58–67, I.4.61 (ending in def.)
(loc.) VI.1.100
ḌatanaC (nom.) V.3.93 * 94
ḌataraC (nom.) V.3.92 * 94
ḌupaC (nom.) V.3.89
ḌvalaC (nom.) IV.2.88
tṛC (nom.) V.3.59
dadhnaC (nom.) V.3.37 * 38
(abl.) IV.1.15
dvyaśaC (nom.) V.3.37 * 38
(abl.) IV.1.15
nāṭaC (nom.) V.2.31
piṭaC (nom.) V.2.33
bahuC (nom.) V.3.68
biḍaC (nom.) V.2.32
birīsaC (nom.) V.2.32
bhrāṭaC (nom.) V.2.31
mātraC (nom.) V.3.37 * 38
(abl.) IV.1.15
valaC (nom.) V.2.112 * 113, IV.2.89
'VU'C (nom.) V.3.80 (dial.)
laC (nom.) V.2.96 * 97, * 99 * 100
śaṅkaṭaC (nom.) V.2.28
śālaC (nom.) V.2.28
ṢaC (nom.) V.4.113 * 114
ṢṭaraC (nom.) V.3.90 * 91
sUC (nom.) See in *U* class

J class
S B V I — *Jus* (nom.) III.4.108 * 109–110 * 111 * 112 (gr.)
(loc.) VII.3.83
S B I — *Jas* (nom.) IV.1.2
(gen.) VII.1.17, 20 * 21–24, VII.1.50 *(chand.)* VI.1.166
(loc.) VII.2.93, VI.1.105 * 106 *(chand.)* VII.3.109

Ñ
S B V D — *iÑ* (nom.) III.3.110
ukaÑ (nom.) III.2.154

KaÑ See *K* class
KHamUÑ See *KH* Class
KHukaÑ See *KH* class
GHaÑ See *GH* class
naÑ (nom.) III.3.112
'*YU*'*Ñ* (nom.) III.2.146 * 47
S B D *aÑ* (nom.) IV.1.86 *(chand.)* IV.1.104, 141, 161, 168 * 169, IV.24.12 IV.2.44, IV.2.71 * 72–76, IV.2.106, 108, IV.3.7, 33, 93, 119, 122, 123, 127, IV.3.139 * 140–141, IV.3.154 * 155, IV.3.168, IV.4.49, V.2.83, V.3.14, V.1.15, V.1.26, V.1.41, V.1.129, V.3.117
(gen.) II.4.64
(abl.) IV.1.15, 100
iÑ (nom.) IV.3.127
(gen.) II.4.60, IV.1.78 * 79–81, IV.1.179, IV.1.95 * 96–97, IV.1.101, 122, 153
uKaÑ (nom.) V.1.104
'*KH*'*aÑ* (nom.) IV.4.99, IV.1.141, V.1.11, V.1.71, V.1.81, V.2.1 * 4, V.2.5, IV.2.94, IV.3.1 * 2–3
C'*PH*'*aÑ* See under *C* class
Ña (nom.) V.3.50, IV.2.58
Ñiṭh (nom.) IV.2.116 * 117–118
Ñya (nom.) V.3.112 * 113, V.4.23, V.4.26, V.1.14, IV.3.58 * 59, IV.3.84, IV.3.92, IV.3.128, IV.4.90
ÑyaṄ (nom.) IV.1.171
ÑyaṬ (nom.) V.3.114
ṬlaÑ (nom.) IV.3.142
'*ṬH*'*aÑ* (nom.) IV.3.6 * 7, * 11–15, 19–21, 50, 60, 61, 67–69, 78, 79, 97, IV.2.35, IV.4.6 * 8, 11, 38, 52, 58, 103, IV.2.116 * 117–120, V.2.76, V.1.18, * 26, V.1.44 * 47 * 78–79 * 90 * 93 * 101 * 102, V.1.108, * 109
'*ḌH*'*akaÑ* (nom.) IV.2.95, IV.2.96, IV.1.140
'*ḌH*'*aÑ* (nom.) V.1.10, 13, 17, V.3.101, IV.2.20–21, IV.3.42, IV.3.56, IV.3.94, IV.3.159, IV.1.135 * 136
dhamUÑ (nom.) (~*dhā*) V.3.45
dhyamAÑ (nom.) (~*dhā*) V.3.45
naÑ (nom.) IV.1.87
'*PH*'*aÑ* (nom.) IV.1.98, 100, * 101–103, 110, * 111
'*PH*'*iÑ* (nom.) IV.1.91, 149, 150, 154 * 155–159 (157 dial.)
yaÑ (nom.) V.3.118, IV.1.101, 105 * 106–109, IV.2.48, IV.3.10, 127, 168
(gen.) II.4.64
'*VU*'*Ñ* (nom.) V.1.132 * 133–134, IV.2.39, IV.2.53, IV.2.121 * 122–

130, IV.2.134, 135–136, IV.3.27, 45, 49, 99, 118, 126
ṢyaÑ (nom.) V.1.123 * 124
snaÑ (nom.) IV.1.87

Ṭ
augment *aṬ* (nom.) VII.3.99 (gr.) * 100
(-vyavāye) (comp.) VIII.3.71, VIII.3.63, VI.1.136
āṬ (nom.) VII.3.112, III.4.92, III.4.94 *(chand.)*
iṬ (nom.) V.1.23, I.2.2 (def.), III.1.45, VII.2.8 * 9–34 (31–34 *(chand)*, VII.2.35 * 36–40, 41, * 42–78, VI.1.196
(abl.) VIII.2.28, VIII.3.79
(loc.) VI.1.188 * 189, VI.1.196
(*-ādau* = before a seg. beginning with *iṬ*)
VII.3.93 * 94–98 (97 *chand.*), VII.1.62, VII.2.4 * 5–7
īṬ (loc.) VIII.2.28
ṅUṬ- See *U* class
dhUṬ (nom.) VIII.3.29 * 30
ṇuṬ- See *U* class
mUṬ- See *U* class
yāṬ (nom.) VII.3.113
yāsUṬ See *U* class
rUṬ (nom.) VII.1.6 * 7 * 8 *(chand.)*
sīyUṬ See *U* class
sUṬ See *U* class
syāṬ (nom.) VII.3.114
S B V I *LAṬ* (nom.) III.2.123, III.2.118 * 119–122, III.3.4 * 5, III.3.142 * 143
(gen.) III.4.83 * 84, III.2.124.26
LIṬ (nom.) III.4.6 *(chand.)*, I.2.4, III.2.105 *(chand.)*, III.2.115 * 117
(gen.) III.2.106 *(chand.)* * 107–109, VIII.3.78 * 79
(loc.) VII.4.9 * 10–12, VII.4.68 * 69–73, * 74 *(chand.)*, VII.3.57 * 58, VII.2.37, III.4.82, III.4.114, VI.1.8, VI.1.17, VI.1.38, * 39–40, VI.1.46, II.4.40 * 41, II.4.49, II.4.55, VII.1.62 * 63–64, VIII.3.118
LUṬ (nom.) VIII.1.29, III.3.15
(loc.) II.4.85, I.3.93
LṚṬ (nom.) VIII.1.46, VIII.1.51, III.2.112 * 113–114, III.3.144, III.3.146, III.3.151, III.3.13, III.3.133, III.3.14
LEṬ (nom.) III.4.7 *(chand.)* * 8 *(chand.)*
(loc.) III.4.94 *(chand.)* * 95–99 *(chand.)*, VII.3.70 *(chand.)*
LOṬ (nom.) III.4.2 * 3–5, III.3.157, III.3.162, III.3.165 * 166, III.3.173, III.3.8, VIII.4.61, VIII.4.16, VIII.1.51 * 52–54
S B V D *Ṭa* (nom.) III.2.16 * 18–22 * 23 *(chand.)*

ṬaK (nom.) III.2.8, III.2.52 * 53–54
'ṆY'UṬ (nom.) III.1.147 * 148
L'YU' (nom.) III.1.134
L'YU'Ṭ (nom.) III.3.113, III.3.115 * 116–117
(*YU* = *LYU* + *LYUṬ*) loc. II.4.57
'VI'Ṭ (nom.) III.2.67 *(chand.)* III.2.68 * 69

S B D
Fem. augment
ṬāP (Nom.) IV.1.4, IV.1.9
tamaṬ V.2.56 * 57–58
thaṬ (nom.) V.2.50
maṬ (nom.) V.2.49

S B I
auṬ IV.1.2
Ṭā (nom.) IV.1.2
(gen.) VII.1.12
(loc.) II.4.34

S B D
caraṬ (nom.) V.3.53 * 54
ṬaC See *C* class
Ṭi'ṬH'aN (nom.) IV.4.67, V.1.25
ṬeṇyaṆ (nom.) V.3.115
Ṭ'YU' (nom.) IV.3.23, * 24
Ṭ'YU'L (nom.) IV.3.23 * 24
ṬlaÑ See *Ñ* class
ḌaṬ (nom.) V.3.48 * 49–58
mayaṬ (nom.) V.2.47, V.4.21 * 22, IV.3.82, IV.3.143 * 144–146, IV.3.148 * 149–151

ṬH class
S B D
ÑiṬH IV.2.116 * 117–118

D class
S B V I
Ḍā (nom.) II.4.85
(substitute)
Ḍa (nom.) III.2.48 * 49–50, III.2.97 * 98–101, (loc.) VI.4.142-43
Ḍu (nom.) III.2.180

S B D fem.
ḌāP (nom.) IV.1.13

S B D
Ḍa (nom.) V.2.45 * 46
ḌaC (nom.) See under *C* class
ḌaṬ See under *Ṭ* class
ḌaṆ (nom.) V.1.62
ḌatamaC See under *C* class
ḌataraC See under *C* class
Ḍati (nom.) I.1.23 (def.) I.1.25 (def.), V.2.41
ḌāC See under *C* class

ḌupaC See under *C* Class
ḌmatUP See under *U* class
Ḍya (nom.) IV.4.113, IV.2.9
ḌyaṆ (nom.) IV.4.111
ḌyaT (nom.) IV.4.113, IV.2.9
ḌvalaC See under *C* class
Ḍ'VU'N (nom.) V.1.24
S B I *Ḍā* (substitute) VII.1.39 *(chand.)*
Ḍyā (—) VII.1.39 *(chand.)*
Ṇ class *CiṆ* See under *C* class
S B V D – B V *ṆiṄ* See under *Ṅ* class
ṆiC See under *C* class
(Ṇi = ṆiṄ, ṆiC, ṆiN) (nom.) III.2.137
(loc.) VI.1.31 * 32, VI.1.48, VI.1.54 * 55–57, VIII.2.8, II.4.46, II.4.51, VII.4.1 * 2–8 (8 *chand.*) VII.3.36 * 37–43, I.3.67, I.3.88, I.4.52 * 53
(abl.) VIII.4.30
(gen.) VIII.3.61, VII.2.26 * 27, I.3.67
S B V I *ṆaL* (nom.) III.4.82, VII.1.91
(loc.) VII.3.85, VII.3.32
S B V D *aṆ* (nom.) III.3.12, III.2.1-2
(loc.) VI.2.75 * 76–78
(abl.) IV.1.15
inUṆ See under *U* class
uṆ (nom.) III.3.1 * 2
GHinUṆ See under *GH* class
Ṇa (nom.) III.1.140 * 141–143, III.3.60
ṆaC See under *C* class
ṆamUL (nom.) III.4.12 *(chand.)*, III.4.22 * 23–24, III.4.26 * 27–58, III.4.59 * 60–64
(loc.) VI.1.53, VI.1.194, VII.1.69
ṆinI See under *I* class
(Ṇin = ṆinI) loc. VI.2.79 * 80–81
ṆyaT (nom.) III.1.124 * 125–131
(gen.) VI.1.214
(loc.) VII.3.52 * 60
(Ṇya) (loc.) VII.3.65 * 66–69
= ṆyaT
Ṇ'YU'Ṭ See under *Ṭ* class
Ṇ'VI' (nom.) III.2.62 * 63–66 *(chand.)*
Ṇ'VI'N (nom.) III.2.71 * 72 *(chand.)*
Ṇ'VU'C See under *C* class

Ṇ'VU'L (nom.) III.1.133, III.3.10, III.3.108 * 109–110

S B D *aṆ* (nom.) IV.3.16, 22, 33, 57, IV.4.56, IV.4.68, IV.4.80, IV.4.94, IV.4.112, IV.4.124, IV.4.126, IV.3.137, IV.3.138, IV.3.152, IV.3.164 * 165, IV.4.4, IV.4.18, IV.4.25, IV.2.77 * 78–79 IV.2.110 * 111–113, IV.2.132 * 133, IV.3.71, IV.3.73, IV.3.76, IV.3.93, IV.3.108, IV.3.127, IV.3.128, IV.3.136, IV.2.37, IV.2.29, IV.1.78 * 79–81, 83 * 84, IV.1.112 * 113–118, IV.1.156, IV.1.170, V.1.27 * 28–31, V.1.36, V.1.41, V.1.97, V.1.105, V.1.105, V.1.110, V.1.125, V.1.130 * 131, V.2.38, V.2.61, V.2.103 * 104–105, V.3.107, V.3.117, V.3.118

inUṆ See under *U* class

'CH'aṆ (nom.) IV.3.94, IV.3.102, IV.1.132 * 133–134

ṬeṇyaṆ See under *Ṭ* class

ḌaṆ See under *Ḍ* class

ḌyaṆ See under *Ḍ* class

Ṇa (nom.) IV.1.147, IV.1.150, V.1.10, V.1.76, V.1.98, V.2.101, IV.4.62, IV.4.85, IV.4.100, IV.2.57

ṆaC See under *C* class

ṆinI See under *I* class

Ṇya (nom.) IV.1.85, IV.1.172, IV.1.151 * 152, IV.4.101

ṆyaT (nom.) V.1.83 * 84, IV.4.44 * 45

T class *ṆyaT* See under *Ṇ* class

S B V D *(Ṇya = ṆyaT)* VII.3.65 * 66–69

tavyaT (nom.) III.1.96

yaT (nom.) III.1.97 * 98–106

(gen.) VI.2.156

S B D *aT* (nom.) V.3.12

ṆyaT See under *Ṇ* class

yaT (nom.) IV.2.17, IV.3.160 * 161, IV.4.75 * 76–77, IV.4.82 * 83–84, IV.4.86 * 87–89, IV.4.91, 92–98, IV.4.105, IV.4.107–108, IV.4.110, IV.4.116, IV.4.119 * 120–123, IV.4.125, IV.4.128, * 129, IV.4.130, IV.4.134, IV.2.101, IV.3.4, IV.3.5, IV.3.6, IV.3.54 * 55, IV.3.64, IV.3.71, IV.3.79, IV.3.114, IV.3.121, IV.1.137, IV.1.140, IV.1.161, V.1.2, V.1.3–4, V.1.6 * 7, V.1.34 * 35–36, V.1.39 * 40, V.1.49, V.1.65 * 67–70 *(Chand.)* V.1.81, V.1.98, V.1.100, V.1.102, V.1.107, V.2.3 * 4, V.2.16 * 17, V.3.103 * 104, V.4.24 * 25

(gen.) VI.2.156

vyaT (nom.) IV.1.144

S B V D → B V *N* class *ŚyaN* (nom.) III.1.69 * 70–72

(loc.) VII.1.81, VII.3.71, VII.3.74

saN (nom.) I.2.8 * 9–10, I.2.26, III.1.5 * 6–7

(*-ādyanta*, ending in *saN* etc.) (nom.) III.1.32

(loc.) VII.4.54, VII.4.55–57, VII.4.79 * 80–81, VII.3.57 * 58, VII.

1.12, VII.2.41, VII.2.49, VII.2.74 * 75, II.4.37, II.4.47 * 48, I.3.92, II.4.51, VI.1.31 * 32
(-vat as in *saN)* VII.4.93
(gen.) I.3.57, * 58–59, I.3.62, VI.1.9
(abl.) III.2.168

S B V D
atṛN (nom.) III.2.104
adhyaiN (nom.) III.4.9
aseN (nom.) III.4.9 *(chand.)*
iN (nom.) III.2.24 * 25–26 * 27 *(chand.)*
KadhyaiN See under *K* class
KaN See under *K* class
KasUN See under *K* class
KukaN See under *K* class
KeN See under *K* class
KtiN See under *K* class
KlukaN See under *K* class
K'VI'N See under *K* class
KseN See under *K* class
KH'YU'N See under *KH* class
Ṇ'VI'N See under *Ṇ* class
taveN (nom.) III.4.9 *(chand.)*
tavaiN (nom.) III.4.9 *(chand.)*
tumUN See under *U* class
tṛN (nom.) III.2.135, V.3.59
tosUN See under *U* class
tvaN (nom.) III.4.14 *(chand.)*
thakaN (nom.) III.1.146
najIN See under *I* class
naN (nom.) III.3.91
manIN See under *I* class
'VU'N (nom.) III.1.149 * 150
ŚadhyaiN (nom.) III.4.9 *(chand.)*
ŚānaN (nom.) III.2.128
ṢākaN (nom.) III.2.155
ṢṭṛaN (nom.) III.2.181 * 182–183
Ṣ'VU'N (nom.) III.1.145
seN (nom.) III.4.9 *(chand.)*

S B D fem.
ṄīN (nom.) IV.1.73

S B D
aN (nom.) V.3.48 * 50
iṣṭhaN (nom.) V.3.55
īkaN (nom.) V.1.133
īyasUN (nom.) V.3.57 * 58–59 *(chand.)*

(loc.) V.3.60 * 61–65
(abl.) V.4.156
īran (nom.) V.2.111
kaN (nom.) V.2.64 * 65–75 * 77–82, V.3.51, V.3.75 * 76–80, V.3.81–83, V.3.87, V.3.95 * 96–100, V.4.29 * 30–33, V.1.22 * 23, 51 * 90, IV.2.131, IV.3.32, 65, 147, IV.4.21, V.4.3 * 4–6
'GH'aN (nom.) V.2.84 *(chand.)*, V.3.79 * 80 (dial.), IV.2.26, IV.4.115
Ṭi'ṬH'aN See under *Ṭ* class
'ṬH'aN (nom.) V.2.85, 115 * 116–117, V.1.21, 46, 47 * 48, 51, IV.4.7, 13 * 14, 42, 70
Ḍ'VU'N See under *Ḍ* class
tikaN (nom.) V.4.39
tyakaN V.2.37
thyaN (nom.) V.1.8
'PH'iN (nom.) IV.1.159 (dial.)
yaN (nom.) IV.2.42, IV.4.114
'VU'N (nom.) V.2.62 * 63, V.4.1 * 2, IV.2.61, IV.3.28 * 29–30, IV.3.48, IV.3.98, IV.3.125
vyaN (nom.) IV.1.145
ṢkaN (nom.) V.1.75
Ṣ'ṬH'aN (nom.) V.1.54 * 55, IV.3.70, IV.4.10 * 11, * 16–17, IV.4.53 * 54

P class S B V I *tanaP* (nom.) VII.1.45 *(chand.)*
taP (nom.) VII.1.45 *(chand.)*
tiP (Nom.) III.4.78
(loc.) VIII.2.73
miP (nom.) III.4.78, III.4.101
siP (nom.) III.4.78, III.1.34
(loc.) VIII.2.74 * 75

S B V D → B V *ŚaP* (nom.) III.1.68
(loc.) VII.1.81
(gen.) II.4.72, * 73, III.1·69-90

S B V D *aP* (nom.) III.3.57 * 58–87
(gen.) VI.2.144
(loc.) II.4.39, II.4.56
KyaP See under *K* class
KvanIP See under *K* class
KvaraP See under *K* class
K'VI'P See under *K* class
ṄvanIP See under *I* class
LyaP (nom.) VII.1.37
(loc.) VI.1.41 * 42–44, II.4.36 VI.4.56

vanIP See under *I* class

S B D fem *āP* (= *CāP*, *ṬāP*, *ḌāP*) (gen.) VII.3.105 * 106, II.4.82
(abl.) VII.1.18, VI.1.68, IV.1.1 (heading for chapters IV and V) VII.3.113 * 114–115
(loc.) VII.3.44 * 45–49 (dial.)
ṄīP See under *Ṅ* class
CāP See under *C* class
ṬāP See under *Ṭ* class
ḌāP See under *Ḍ* class

S B I *ā-P* (= declensional endings from instrumental singular to loc. plural)
sU-P (all the 21 Declensional endings)

S B D *aP* (nom.) V.4.116
(loc.) II.4.39, II.4.56
enaP (nom.) V.3.35
(instr.) II.3.31
kaP (nom.) V.4.151 * V.4.152–154 (neg.), * 155–60
(loc.) VII.4.14 * 15, VI.2.173 * 174
kalpaP (nom.) V.3.67
kuṇaP (nom.) V.2.24
caṇaP (nom.) V.2.26
cuñcuP (nom.) V.2.26
'ṬH'aP (nom.) IV.3.26
ḌmatUP See under *U* class
tamaP (nom.) V.3.55 * 56
tayaP (nom.) V.2.42
(abl.) IV.1.15
taraP (nom.) V.3.57
tyaP (nom.) IV.2.104
pāśaP (nom.) V.3.47
matUp See under *U* class
maP (nom.) IV.4.20
yaP (nom.) V.2.120, V.1.82 * 83
rūpaP (nom.) V.3.66
vatUP See under *U* class

type of zero *LUP* (nom.) IV.2.4,
1.1.61, 1.2.54,
V.2.105, V.3.98 * 99–100
(loc.) I.2.51, II.3.45

*M*class augment *uM* (nom.) VII.4.20
nUM See under *U* class
pUM See under *U* class

S B V D → B V *ŚnaM* (nom.) III.1.78 * 79

R class

S B V D *anīyaR* (nom.) III.1.96

S B D *jātīyaR* (nom.) V.3.69

deśiyaR (nom.) V.3.67

L class

S B V I *ṆaL* See under *Ṇ* class

thaL (nom.) III.4.82

(loc.) VII.2.61 * 62–66 (63 Gr.), VI.1.196

S B V D *KamUL* See under *U* class

KHaL See under *KH* class

ṆamUL See under *Ṇ* class

Ṇ'VU'L See under *Ṇ* class

LyaP See under *P* class

L'YU' (nom.) III.1.134

L'YU'Ṭ See under *Ṭ* class

S B I *āL* VII.1.39 *(chand.)*

(substitute)

S B D *Ṭ'YU'L* See under *Ṭ* class

taL (nom.) IV.2.43, V.4.27, V.1.119 * 121–122

traL (nom.) V.3.10

tātiL (nom.) IV.4.142 * 143–144, V.4.41 *(chand.)*

tiL (nom.) V.4.41 *(chand.)*

thāL (nom.) V.3.23, V.3.101

bhaktal IV.2.54

yaL (nom.) IV.4.131

rhiL (nom.) V.3.14, V.3.20–21 *(chand.)*

vidhal IV.2.54

Ṣ'ṬH'al (nom.) IV.4.9, IV.4.73

Ś class

S B I *eŚ* (substitute) III.4.81

maŚ (substitute) VII.1.40 *(chand.)*

S B V D → B V *Śa* (nom.) III.1.77

ŚaP See under *P* class

ŚnaM See under *M* class

Śnā (nom.) III.1.81 * 83–84 *(chand.)*

Śnu (nom.) III.1.73 * 74–76, III.1.82

ŚyaN See under *N* class

ŚLU (nom.) I.1.61, II.4.75 * 76 *(chand.)*, III.1.39

(loc.) VI.1.10, VII.4.75 * 76–77, * 78 *(chand.)*

S B V D *KHaŚ* See under *KH* class

CānaŚ See under *C* class

	Śa (nom.) III.1.137 * 138–139, III.3.100 * 101.
	ŚatṚ See under *Ṛ* class
	Śadhyai (nom.) III.4.9 *(chand.)*
	ŚadhyaiN See under *N* class
	ŚānaC See under *C* class
	ŚānaN See under *N* class
	(Śi = ŚatṚvati ending in *ŚatṚ)* abl. VII.1.80 * 81
S B I	*Śas* (nom.) IV.1.2
	(gen.) VII.1.20 * 21–23, VI.1.103, VI.1.167
	(loc.) VI.1.93
	Śi (nom.) I.1.42, VII.1.18 * 19, VII.1.20, VII.1.17
	(gen.) VI.1.70
	Śe (nom.) I.1.13, VII.1.39 *(chand.)*
S B D	*iŚ* (nom.) V.3.3
	Śas (nom.) V.4.42 * 43
Ṣ class	
S B V D → B V	*KyaṢ* See under *K* class
S B V D	*ṢākaN* See under *N* class
	ṢṭraN See under *N* class
	Ṣ'VU'N See under *N* class
S B D fem.	*ṄīṢ* See under *Ṅ* class
S B D	*Ṣa* (nom.) V.4.115
	ṢaC See under *C* class
	ṢākaN See under *N* class
	ṢṭaraC See under *C* class
	ṢṬHaN See under *N* class
	Ṣ'ṬH'aL See under *L* class
	ṢPHa (nom.) IV.1.17 (dial.) * 18–19 (dial.)
	Ṣ'PH'aK See under *K* class
	ṢyaṄ see under *Ṅ* class
S class	*'GH'aS* V.1.116 (chand.)
	'CH'aS IV.2.115
S B D	*yaS* (nom.) V.2.138
	yuŚ (nom.) V.2.123, V.2.138, V.2.140

INDEX 2C

Reference to functional significance of each classifier

-A		(BV)	(abl.)	(accent of suffix is grave)
			(abl.)	VII.2.62 (no *iṬ*)
-Ā		(BV)	(abl.)	VII.2.16 * VII.2.17 *(iṬ)*
-I		(BV)	(abl.)	VII.1.58 *(nUM)*
-IR		(BV)	(abl.)	III.1.57 *(aṄ~CLi)*
-Ī		(BV)	(abl.)	VII.2.14 (no *iṬ*)
-U	(1)	Series *(kU, cU, ṭU, tU* and *pU)*		(nom.) I.1.69 (def. of homorganic)
	(2)	(BV)	(abl.)	VII.2.56 *(iṬ)*
-Ū		(BV)	(abl.)	VII.2.44 *(iṬ)*
Ṛ		(BV)		VII.4.2 (reduction)
-Ḷ		(BV)	(abl.)	III.1.55 *(aṄ)*
-U, Ū, Ṛ, Ṝ, Ḷ, Ḹ				all these five classes *(u-K)* share as *SD*
			(abl.)	IV.1.6 *(ṄīP)*
B formed by *SD* of these classes				
			(gen.)	VII.1.70 *(nUM)*
			(abl.)	VI.3.45 (stem final vowel shortening)
-O		(BV)	(abl.)	VIII.2.45 (*n-t* of *Kta* and *KtavatU)*
-A to -O all classes share as (BV)				
	(a) Accented		(abl.)	I.3.78 (active), * VII.3.34 (no vowel) gradation before *Ñ* and *Ṇ* class suffixes)
	(b) Unaccented		(abl.)	I.3.12 (middle),
			(abl.)	VI.1.186 (accent of S B V I is grave),
				VI.4.37 (Ø ~ Nasal of stem),
			*	VI.4.38–39 (—) VII.2.10 (no *iṬ*)
	(c) Circumflex		(abl.)	I.3.72 (both act. and middle)
K	(a) general (inclusive and excl. of . . .)		(nom.)	I.2.5 * 6–26
	(positionally)		(nom.)	I.1.46
	(b) as non S B D class		(nom.)	(*L* only) III.4.104 *(yāsUṬ* of *LIṄ=K)*
			(loc.)	I.1.5 (Vowel Gradation)

(loc.) II.4.36 (Stem allomorphy)
(loc.) VI.1.16 (—)
(loc.) VI.1.39 (—)
(loc.) VI.1.58 * 59 (augment after BV)
(loc.) VI.4.63 (Stem allomorphy)
* VI.4.64 (—)
VI.4.66, VI.4.98 * 99–100 (—)
VI.4.15 (Stem allomorphy)
VI.4.37 (—)
(loc.) VII.2.11 (*iṬ* augment)
(loc.) VII.4.22 (Stem allomorphy)
* VII.4.23 (—)
* VII.4.25 (—)
VII.4.40 (—)
* VII.4.41 (—)
* VII.4.42 (—)
* VII.4.45–47 (—)
(loc.) VII.4.69 (—)
(gen.) *(a-)* VII.4.83 (reduplication)

(c) as S B D class
(gen.) VI.1.165 (accent)
(loc.) VII.2.118 (Vowel gradation)
* VII.3.1–31 (—)

KH only S B V D
(loc.) VI.3.66 (*-mUM* augment)
* VI.3.67–69 (—)

GH only S B V D
(loc.) VII.3.52 *(kU ~ c, j)*
VII.3.60 *(kU* does not ~ *c, j)*
* VII.3.62–64 (—)

Ṅ *(General)*
(loc.) I.1.5(vowel gradation)
(nom.) I.2.1 * I.2.2–4 (inclusive of . . .)

(as *a* substitute *ādeśa*)
(nom.) I.1.53

(as *S B I)*
(loc.) I.4.6 (stem allomorphy of *nadī*)
(loc.) VII.3.111 (stem allomorphy of *ghi*)
(loc.) VII.3.112–114 (augment after stem *āṬ, yāṬ, syāṬ)*
* VII.3.115 (optionally —)

(as BV)
(abl.) I.3.12 (middle)
(abl.) VI.1.186 (*sārvadhātuka* is unaccented)

(as S B V)
(nom.) (L only) III.4.103 *(yāsUṬ = Ṅ)*
(loc.) VII.4.22 (stem allomorphy)
* VII.4.23–25 (—)
VII.3.85 (—)
VI.1.16 (Vowel gradation of stem)

			VI.4.15 (Stem allomorphy)
			VI.4.17 (Stem allomorphy)
			VI.4.63 (*yUṬ* augment)
			* VI.4.64 Stem allomorphy)
			VI.4.66 (—)
			VI.4.98 (—)
			* VI.4.99 (*chand.*)
			* VI.4.100 (—)
		(gen.)	VII.2.81 (suffix allomorphy)
		(gen.)	(*L* only) (SBVI) III.4.99 (suffix allomorphy of *Ṅ* class conjugational) * III.4.100–101
C (Both *C*- and -*C*) (General) S B D		(gen.)	VI.1.163 (acute accent on the last syllable)
			* VI.1.164 (—) (inclusive of *Ñ* sub class of *C*, so that *Ñ* class functions are not operative on *C*-*Ñ* class)
Ñ (Both *Ñ*- and -*Ñ*) (SD general)	(BV)	(abl.)	I.3.72 (both active and middle)
		(loc.)	VI.1.197 (acute accent on the first syllable of the stem)
(non S B D class)		(loc.)	VII.2.115 (vowel gradation of the stem final vowel)
			* VII.2.116 (vowel gradation of the stem penultimate vowel)
		(loc.)	* VII.3.32–35 (stem allomorphy of *han*, *-ā* stem, – vowel (accented) stem, *janI* and *vadhI*)
(S B D)		(loc.)	* VII.2.117 (lengthening of the first vowel of the stem)
			* VII.2.1–31 (—)
		(loc.)	II.4.58 (*aṆ* and *iṆ* suffixes replaced by zero) (B-class formed by S B D of this class)
		(loc.)	IV.3.155 *(aÑ)*
ÑI	(only BV)	(abl.)	III.2.187 (gets *Kta* in the present tense)
Ṭ	S B V I	(gen.)	III.4.79 (suffix allomorphy of *Ṭ* class conj. suffixes) * III.4.80
(B either formed by S B V D or S B D classes of *Ṭ*, or by itself belonging to *Ṭ* class)			
		(abl.)	IV.1.15 *(ṄīP* fem.)
	(augment)	(nom)	I.1.46 (position before the suffix that brings it)

ṬU	(only BV)	(abl.) III.3.89 *(athuC)*
Ḍ	(S B D)	(loc.) VI.4.142 (*Ø ~ti* of *vimśati*)
		* VI.4.143 (*Ø~* "*ṭi*" of "*bha*")
ḌU	(only BV)	(abl.) III.3.88 *(Ktri)*
Ṇ	(both *Ṇ-* and *-Ṇ*)	
	(non S B D class)	(nom.) (S B I) VII.1.90 (inclusive of . . .)
		* VII.1.92 (—)
		(nom.) (S B V I) * VII.1.91 (—)
		(loc.) VII.2.115 (Vowel gradation of stem Vowel)
		* VII.2.116 (Vowel gradation of stem Vowel)
		* VII.3.32–35 (Stem allomorphy)
		* VII.3.54 (—)
	(S B D class)	(loc.) * VII.2.117 (—)
		* VII.3.1–31 (—)
T	(general)	(nom.) VI.1.185 (circumflex accent)
N	(general)	(loc.) VI.1.197 (first syllable of stem is accented)
	(S B V D)	(loc.) VI.2.50 (accent shift)
P	(general)	(nom.) III.1.4 (unaccented)
	(S B V)	(loc.) VII.3.88.94 (stem allomorph)
	(S B V D)	(loc.) VI.1.71 *(tUK)* aug.
	(S B V)	(loc.) VI.1.192 (accent)
		(loc.) VII.3.87 (Stem allomorphy)
	(S B V I)	(nom.) III.4.87 * 88 (non inclusive of *hi*)
		(nom.) III.4.92 (inclusive of . . .)
-M	(augment only)	(nom.) I.1.47 (position)
-R	(general)	(loc.) VI.1.217 (the penultimate syllable of stem is accented)
-L	(general)	(loc.) VI.1.193 (Syllable preceding is accented)
		* VI.1.194 (exception is *ṆamUL*)
Ś-	(S B V)	(abl.) (as adj. of stem *śadI*) I.3.60 (middle)
	(S B V I)	(nom.) III.4.113 (*sārvadhātuka* full verb form)
		(loc.) VI.1.45 (Stem allomorphy)
		(loc.) VII.4.28 (—)
		VII.1.59 (*nUM* augment)
		VII.3.75 * 76–84 (Stem allomorphy)
	(general)	(nom.) I.1.55
Ṣ	(SD)	(abl.) IV.1.51 (*ṄīṢ* fem.)
	(BV)	(abl.) III.3.104 *(aṄ)*
-S	(suffixes only)	(loc.) I.4.16 (constituent preceding it is *pada* = word final)

SELECTED BIBLIOGRAPHY

SELECTED WORKS OF MODERN LINGUISTS

1. Patric Suppes, *A Comparison of the Meaning and uses of Models in Mathematics and the Empirical Sciences.*
2. Charles Francis Hockett, *A Course in Modern Linguistics.*
3. Charles Francis Hockett, *A Manual of Phonology.*
4. George Leonard Trager and Henry Lee Smith, *An Outline of English Structure.*
5. Edgar Howard Sturtevant, *An Introduction to Linguistic Science.*
6. H. A. Gleason Jr., *An Introduction to Descriptive Linguistics.*
7. L. Hjelmslev, *Prolegomena to a Theory of Language.*
8. Benjamin Elson and Velma B. Pickett, *Beginning Morphology and Syntax.*
9. Ferdinand de Saussure, *Course de Linguistique Générale*, translated into English.
10. Einar Haugen, "Directions in Modern Linguistics", *Language*, Vol. 27.
11. M. Joos, "Description of Language Design", *Readings in Linguistics.*
12. Joseph H. Greenberg, *Essays in Linguistics.*
13. Roman Jakobson and Morris Halle, *Fundamentals of Language.*
14. Nikolai Sergevich Trubetzkoi, *Grundzüge der Phonologie.*
15. C. F. Hockett, "Grammar for the Hearer", *Proceedings of the Symposium in Applied Mathematics*, Vol. 12 (1961).
16. Stephan Cole Kleene, *Introduction to Metamathematics.*
17. Rulon S. Wells, "Immediate Constituents", *Readings in Linguistics*, 1957.
18. Leonard Bloomfield, *Language.*
19. B. L. Whorf, *Language, Thought and Reality.*
20. Sydney M. Lamb, "Machine Translation, Research at the University of California, Berkeley", *Prodeedings of the National Symposium on Machine Translation*, edited by H. T. Edmundson (1961).
21. Zellig S. Harris, *Methods in Structural Linguistics.*
22. S. M. Lamb, *Mono-Grammar.*
23. Louis Hjelmslev and H. J. Uldall, *Outlines of Glossematics.*
24. Bernard Bloch and George L. Trager, *Outline of Linguistic Analysis.*
25. S. M. Lamb, "On the Mechanization of Syntactic Analysis" (Paper under publication).
26. Roman Jakobson, Gunnar Fant, and M. Halle, *Preliminaries of Speech Analysis, the Distinctive Features and Their Correlates.*
27. *Proceedings of the National Symposium on Machine Ttanslation*, edited by H. T. Edmundson (1961).
28. Martin Joos, *Readings in Linguistics.*
29. William Dwight Whitney, *Sanskrit Grammar.*
30. W. S. Allen, *Sandhi.*
31. M. B. Emeneau, *Sanskrit Sandhi.*
32. Noam Chomsky, *Syntactic Structures.*
33. Paul L. Garvin, "Syntactic Retrieval", *Proceedings of the National Symposium on Machine Translation*, edited by H. T. Edmundson.

34. E. Nida, *Morphology, The Descriptive Analysis of Words.*
35. Robert B. Lees, *The Grammar of English Nominalizations.*
36. M. Haas, *Tunica.*
37. J. F. Staal, "The Theory of Definition in Indian Logic", *J.A.O.S.*, Vol. 81.
38. S. M. Lamb, "The Strata of Linguistic Structure" (Paper under publication).
39. F. G. Lounsbury, "The Method of Descriptive Morphology", *Readings in Linguistics*, 1957.
40. C. F. Hockett, "Two Models of Grammatical Descriptions", *Readings in Linguistics*, 1957.

WORKS REFERRING TO PĀṆINI AND HIS SCHOOL

1. J. F. Staal, *A Method of Linguistic Description.*
2. Wackernagel, *Altindische Grammatik.*
3. S. Varma, *Critical Studies in the Phonetic Observation in Indian Grammarians.*
4. D. S. Ruegg, *Contribution à l'histoire de la philosophie linguistique indienne.*
5. R. Birwe, *Der Ganapatha.*
6. Betty Shefts, *Grammatical Methods in Pāṇini.*
7. A. B. Keith, *History of Sanskrit Literature.*
8. Vasudeva Sharan Agrawal, *India as known to Pāṇini.*
9. F. Kielhorn, *Katyāyana and Patañjali and Their Relations to each other and Pāṇini.*
10. D. V. Devasthali, *Mimāṃsā – The Vākya-Śāstra of Ancient India.*
11. K. A. S. Iyer, "In the concept of Upagraha among the Vaiyakarṇas", *J.O.R.*,
12. S. P. Chaturvedi, "On the Original Text of Pāṇini", *N.I.A.*, Vol. 1.
13. A. C. Burnell, *On the Aindra System of Sanskrit.*
14. Paul Thieme, *Pāṇini and the Pronunciation of Sanskrit.*
15. Paul Thieme, *Pāṇini and the Veda.*
16. Bruno Liebich, *Pāṇini.*
17. Theodore Goldstucker, *Pāṇini.*
18. K. C. Chattopadhyaya, "Pāṇini and the Ṛk Prātiśākhya", *I.H.Q.*, vol. XIII.
19. H. Skold, *Papers on Pāṇini.*
20. W. S. Allen, *Phonetics in Ancient India.*
21. *Ṛk tantravyākaraṇa*, edited by A. C. Burnell.
22. Bhattoji Dīkṣita, *Siddhānta Kaumudi.*
23. *Svara Siddhanta Chandrika.*
24. S. K. Sarma, "Syntactical Meaning – Two Theories", *Adyar Library Bulletin.*
25. S. K. Belvalkar, *Systems of Sanskrit Grammar.*
26. R. S. Bhattacharya, "Some Anomalies in Aṣṭādhyāyī and their Justification', *Bharatīya Vidyā.*
27. William Dwight Whitney, *Study of Sanskrit.*
28. Kṣitīsh Chandra Chatterji, *Technical Terms and Technique of Sanskrit Grammar.*
29. L. Renou, *Terminologie Grammatical du Sanskrit.*
30. Gaurinath Shastri, *The Philosophy of Word and Meaning.*
31. P. C. Chakravarti, *The Philosophy of Sanskrit Grammar.*
32. K. A. S. Iyer, "The points of Views of Vaiyakaranas", *J.O.R.*
33. W. D. Whitney, *The Study of Hindu Grammar and the Study of Sanskrit.*
34. H. E. Buiskool, *The Tripādī.*

SANSKRIT TEXTS

1. Aṣṭādhyāyī, edited by S. C. Basu.
——, *Panini Grammatik*, edited by Böhtlingk.
——, *La Grammaire de Panini*, edited by L. Renou.
2. Bhāṣāvṛtti-Purusottam Deva
3. Durghaṭa vṛtti (Trivendrum edition).
——, edited by L. Renou.

4. Kaśika, Vol. I-II, edited by L. Renou.
——, Pandit Press (used in the present study).
——, Chaukhamba Series.
5. Kṣiratarangiṇi, Ksirasvamin, edited by B. Liebich.
6. Mahābhāṣya with Pradīpaof Kaiyaṭa and Udyota of Nāgeśa (Niranayasagar edition) (a) Mahabhāṣya, edited by F. Kielhorn.
7. Nirukta, Yaska.
8. Nyāsa, Jinendrabuddhi.
9. Padamañjari, Hardatta.
10. Paribhāṣendu Śekhara of Nageśa, edited by F. Kielhorn.
11. Paramalaghumañjūṣā-Nageśa Bhaṭṭa.
12. Ṛk. Prātiśākhya (edited by Mangaldeva Shastri).
13. Śabda Kaustubha, Bhattoji Dikṣita.
14. Siddhānta Kaumudī with Prauḍha Manoramā, Bhattoji Dīkṣita.
15. Vaiyākaraṇa Bhūṣaṇa, Kauṇḍa Bhaṭṭa.
16. Vākyapadīya, Bhartrihari (With commentaries of Helārāja and Puṇyarāja).
17. Vājasaneya Prātiśākhya (V. Venkatarama Sharma).

ŚRĪ RASTU

JANUA LINGUARUM

STUDIA MEMORIAE NICOLAI VAN WIJK DEDICATA

Edited by C. H. van Schooneveld

SERIES PRACTICA

1. MARILYN CONWELL and ALPHONSE JUILLAND: Louisiana French Grammar, I: Phonology, Morphology, and Syntax. 1963. 207 pp., 2 maps. Cloth. Gld. 36.—
3. IRENE GARBELL: The Jewish Neo-Aramaic Dialects of Persian Azerbaijan: Linguistic Analysis and Folkloristic Texts. 1965. 342 pp., map. Cloth. Gld. 64.—
4. MORRIS F. GOODMAN: A Comparative Study of Creole French Dialects. 1964. 143 pp., map. Gld. 22.—
5. ROLAND HARWEG: Kompositum und Katalysationstext, vornehmlich im späten Sanskrit. 1964. 164 pp. Gld. 25.—
6. GUSTAV HERDAN: The Structuralistic Approach to Chinese Grammar and Vocabulary: Two Essays. 1964. 56 pp., 4 figs. Gld. 18.—
7. ALPHONSE JUILLAND: Dictionnaire Inverse de la Langue Française. 1965. 564 pp., 9 figs. Cloth. Gld. 80.—
8. A. HOOD ROBERTS: A Statistical Linguistic Analysis of American English. 1965. 437 pp., 11 figs., 6 tables. Cloth. Gld. 54.—
9. VALDIS LEJNIEKS: Morphosyntax of the Homeric Greek Verb. 1964. 92 pp. Gld. 15.—
10. ROBERT E. DIAMOND: The Diction of the Anglo-Saxon Metrical Psalms. 1963. 59 pp. Gld. 10.—
11. JOSEPH E. GRIMES: Huichol Syntax. 1964. 105 pp. Gld. 18.—
12. CLARA N. BUSH: Phonetic Variation and Acoustic Distinctive Features: A Study of Four General American Fricatives. 1964. 161 pp., 64 figs., 84 tables. Gld. 30.50
13. WILLIAM E. CASTLE: The Effect of Selective Narrow-Band Filtering on the Perception of Certain English Vowels. 1964. 209 pp., 53 figs., 84 tables. Gld. 38.—
14. ANN SHANNON: A Descriptive Syntax of the Parker Manuscript of the Anglo-Saxon Chronicle from 734-891. 1964. 68 pp. Gld. 13.—
15. EICHI KOBAYASHI: The Verb Forms of the *South English Legendary*. 1964. 87 pp. Gld. 17.—
16. HOMER L. FIRESTONE: Description and Classification of Sirionó, a Tupí-Guaraní Language. 1965. 70 pp., 7 figs. Gld. 18.—
17. WOLF LESLAU: Ethiopian Argots. 1964. 65 pp. Gld. 16.—
21. ERICA REINER: A Linguistic Analysis of Akkadian. 1966. 155 pp., graph. Gld. 30.—
23. MARVIN K. MAYERS (ed.), Languages of Guatemala. 1966. 318 pp. Gld. 40.—
46. VIKTOR KRUPA: Morpheme and Word in Maori. 1966. 83 pp., 26 tables, 1 fig. Gld. 20.—
63. JAN SVARTVIK: On Voice in the English Verb. 1966. 214 pp., 57 tables, 25 figs. Gld. 24.—

MOUTON & CO · PUBLISHERS · THE HAGUE

INDIAN INSTITUTE OF ADVANCED STUDY
Acc. No. 29272
Date 31.1.69

Library IIAS, Shimla
491 25 P 193 Ym
00029272